5-1967

A Description of Change in School Expenditures in the San Juan School District from 1951 to 1965 and an Analysis of Student Achievement During the Same Period

Kenneth B. Maughan

A DESCRIPTION OF CHANGE IN SCHOOL EXPENDITURES IN THE SAN JUAN SCHOOL DISTRICT FROM 1951 TO 1965 AND AN ANALYSIS OF STUDENT ACHIEVEMENT DURING THE SAME PERIOD

by

Kenneth B. Maughan

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF EDUCATION

in

Educational Administration

UTAH STATE UNIVERSITY
Logan, Utah

1967

ACKNOWLEDGMENTS

Sincere appreciation is expressed to Dr. Homer M. Johnson, for his valuable insight, counsel, and forthright approach in promoting a climate that was conducive for research, yet allowed me sufficient opportunities for self initiative and growth.

Recognition is also given to committee members Dr. Oral L. Ballam, Dr. Malcom Allred, Dr. James P. Shaver, Dr. Walter R. Borg, and Dr. Terrance E. Hatch for their help and suggestions.

I would like to acknowledge the Board of Education, San Juan School District, for their cooperation in granting me a year's leave of absence to return to school and for their permission to administer standard measures to students in the district.

A heartfelt thanks to my parents, friends, associates, and coworkers whose assistance and encouragement was instrumental in the completion of this study.

I would like to express my thanks and appreciation to my wife, Marceline, and five sons, Craig, Steven, Terry, Mitchel, and Rhett for their patience with a preoccupied husband and father, and for their help, understanding, and encouragement that eventually helped to make this research study become a reality.

Kenneth B. Maughan

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figure Page

ABSTRACT

A Description of Change in School Expenditures in the San Juan School District from 1951 to 1965 and An Analysis of Student Achievement During the Same Period

by

Kenneth B. Maughan, Ed.D.

Utah State University, 1967

Major Professor: Dr. Homer M. Johnson
Department: Educational Administration

The setting for this longitudinal cost-quality study was unique insofar as it provided the rare opportunity to involve a district that had undergone a "rags to riches" transition during the past decade.

The purpose of the study was twofold: (1) To report changes in the "learning opportunities" that were brought about as a result of money. (2) To determine if the per pupil expenditure level had any influence on the learning opportunities of pupils in the San Juan School District, as measured by the achievement gains on the California Achievement Test.

Three hypotheses were tested, all of which hypothesized that the amount of expenditure per pupil would influence the learning opportunities of students in the San Juan School District.

Three school years, 1953, 1958, and 1965, representative of low, transitional, and high expenditure years were selected to compare the achievement gains of pupils.

The sample, consisting of 731 pupils from the three different expenditure years, was drawn from the same schools and grades within the district.

Prior to this study, the 1950 edition of the California Achievement Test had been given to the 1953 and 1958 groups of students and was also given to the 1965 group of students. For statistical computations, I. Q. scores from the California Test of Mental Maturity were obtained for each student.

The research design employed the analysis of covariance to test the significant differences among the group means. The individual comparison between the adjusted means was based on Duncan's Multiple Range Test.

The analysis of covariance produced F values which confirmed all three of the research hypotheses. Statistical evidence indicates that students who attended the two designated schools in San Juan during the high expenditure school year, 1965, did attain significantly higher achievement scores in reading, arithmetic, language, and total achievement, than did the students who attended the same schools during the low expenditure year, 1953, or the transitional year, 1958. However, there were no significant differences in the achievement gains between the low and transitional expenditure years.

The following conclusions were submitted:

1. As additional money became available and provision for learning opportunities changed, educational expenditures increased.

2. As San Juan spent more money on its schools, they generally were able to employ and retain better teachers. The district was able to and did provide more functionally designed and better equipped facilities, instructional materials, and other aids which were helpful in providing better teaching.

3. Money actually purchased professionally trained teachers as evidenced by improvements in the teacher certification, percentage of teachers possessing degrees, teacher turnover, teacher-pupil ratio, annual adoption of competitive salary schedules, and the possible lifetime earning capacity of a beginning teacher.

4. This study implies that, other factors being equal, learning opportunities and expenditure levels tend to go together.

5. There is a definite correspondence between school expenditures and learning opportunities when learning opportunities are measured in terms of achievement gains from the California Achievement Test.

6. If the significance and implication of this study is realized and brought to the public's attention, it will dispell the fallacy that the power of teacher resourcefulness, ingenuity, and good will and dedicated hard work will overcome a meager budget.

7. Often times people are content to be "equal to the average." In a school system this feeling may be expressed in salaries, numbers,

achievement, expenditures, cost per meal, pupil-teacher ratio, etc. However, results from this study indicate that being "equal to the average in school expenditures," is sometimes misleading and perhaps not much better than being below the average. To illustrate, when San Juan's average expenditure per pupil was comparable to that of the state of Utah, the students in the district did not attain significantly higher scores on a standardized achievement test than did the students who attended the same schools when San Juan's average expenditure per pupil was the lowest in the state. On the other hand, when San Juan's average expenditure far exceeded Utah's, significant differences in student achievement were prevalent. Therefore, it would seem advisable for school systems throughout the country not to be complacent and satisfied to be an "average spender," but in the process of spending not to overlook the necessity of planning and development of specific criteria essential to a quality program, which eventually should lead to excellence.

CHAPTER I

INTRODUCTION

How a school system can achieve and maintain an educational program that is capable of producing a worthwhile and competent product for society is one of the most perplexing and controversial problems in education today. Generally speaking, the vast majority of American citizens today want the best quantity and quality of education for their children, but disagree vigorously on what quality education is and how it may be achieved. Many local school boards, communities, and states constantly ask themselves; "If we spend more, do we more adequately provide for educational needs and in doing so, do we get better educational returns?"

Students of public finance and public education have been concerned for decades over variations in public school expenditure levels. They have tried to discover to what extent differences in expenditure levels change learning opportunities. Educators emphasize that learning and progress are inhibited by lack of sufficient school funds.

On the other side of the ledger, certain factions of the public feel that the character of education is shaped by many factors besides money, and often times they are reluctant to support additional revenues for school expenditures, maintaining that the level of expenditure

already provided for public education is adequate and quite burdensome. Often this feeling is enhanced by lack of accessible research studies regarding the correspondence between school expenditures and learning opportunities. However, with few exceptions, every empirical study adds its bit to the assumption that the relationship between school expenditures and educational learning is strong.

It is hoped that information from this cost-quality study will furnish additional insight into the relationship of school cost to school scope, character, and quality that will be helpful in determining educational policy, legislation, and further research.

Statement of Problem

The writer proposes the problem--When a school district undergoes a transition from "rags to riches," what areas of the school program receive major emphasis and what has money actually done to improve the over-all school program? Also, has the money spent provided the students with an atmosphere that is conducive for "learning opportunities?"

To compare student achievement for the past 15 years the following hypotheses are proposed:

1. There will be a significant difference in the achievement gains among three groups of students selected from the total school population for three different expenditure years.

2. There will be a significant difference in the achievement gains in reading, arithmetic, and language among three groups of students

selected from the total school population for three different expenditure years.

3. There will be a significant difference in the achievement gains within the same grade level for students selected from the total school population for three different expenditure years.

Background of Problem

The San Juan School District, located in the extreme southeast area of Utah, is somewhat isolated because of its geography and distance from the urban communities along the "Wasatch Front," Salt Lake City being the principal city. In square miles, the district is the largest school district in America, and thus, as an autonomous American type of school district, is possible the largest school district in the world.

San Juan is also unique among Utah School Districts in that within a decade it increased from below average in financial standing to the highest, based on valuation per school child. This "rags to riches" status was brought about by discoveries of rich mineral and petroleum deposits, namely: uranium, vanadium, potash, natural gas and oil. The assessed valuation of the county rose from $2,643,504 in 1950, to a high of $132,483,785 in 1960, an increase of slightly more than 5000 percent. Also, from 1950 to 1960 the district valuation per school child rose from $2592 to $69,109, as compared to the state's average increase from $5268 to $5392.

School administrators, board members, and patrons were cognizant of this accumulated wealth and suddenly envisioned a golden opportunity to have the quality of schools that was commensurate with this healthy tax base. Implementing this theory into practice, the district expended enormous sums of money for items such as: school buildings, teacher housing, teacher salaries, additional personnel, curriculum expansion, instructional materials, textbooks, library materials, and numerous other educational items.

Implementation of this progressive approach gradually affected San Juan's expenditure per pupil status, and within a short time the expenditure per pupil rose from one of the lowest in the state to one of the highest. It was the intent that as these school expenditures increased, educational opportunity and academic achievement likewise should increase. Therefore, this study will describe and analyze school expenditures for the past 15 years as they relate to educational opportunity.

Also, it will compare student's academic achievement at three different expenditure years namely 1953, 1958, and 1965 to see if significant differences in achievement existed as they related to school expenditures.

CHAPTER II

REVIEW OF RELATED RESEARCH STUDIES

Over the past 45 years numerous empirical studies regarding the relationship between expenditure level and quality of education have been undertaken. In each of these studies, quality has been defined in a number of ways.

Money and Results

Quality education as measured by the administrative and structural setting

Early studies of the relation of school quality to level of expenditure assumed that better educational results are obtained when teachers with longer preparation are employed; when an adequate supply of texts, library books and other instructional materials is provided; when children attend school more regularly for a longer period of time; when classes are smaller; and when teachers possess more preparation.

This method of evaluation is of some value, but it is questionable if actual educational results are measured. Its weakness is the assumption that more teaching facilities, more time spent in school, and enough trained teachers result in better educational returns.

Ayres (1920), Head of the Department of Education of the Russell

Sage Foundation, and later Vice-President of the Cleveland Trust, reported a study of school expenditures and of certain provisions for education in all states from 1896 to 1920. He developed an index number for five financial and five non-financial factors associated with education. He found a high degree of correspondence between the level of expenditure and such items as percent of school-age population attending school, length of the school term percent that high-school attendance was of total attendance, and the average days attended by children of school age. Although he never did attempt to define quality education he concluded,

> . . .the figures for school expenditures do have a close relation to those which show the amount of education given and tell how many are in high school, and that they are important indicators of the efficiency of the system and the quality of education the children receive. (Ayres, 1920, p. 54)

Norton (1926) made a study of the ability of states to support education in which he used five objective measures of educational efficiency chiefly concerned with the holding power of schools. He found that in financially able states more money was spent per pupil, teachers were paid more, more money was expended on non-salary items, and the school plant was superior. In these states there was a longer term, teachers were better prepared, more pupils went on to high school education, and pupils attended school a greater number of days per year. In the states with low school expenditures, there was a smaller circulation of magazines and a higher percentage of illiteracy. This study did

not develop a cost-quality relationship, but it did show that as the wealth per capita in a state increased, the measure of educational efficiency also showed increase.

Norton concluded that the rich states afford their schools much more adequate financial support than the poor states; that the school system in the rich states generally appear to be more efficiently organized than those in the poor states; and that attainment of the people was significantly higher in the rich states which were expending more for education than in the poor states with low expenditures.

The first survey conducted for the purpose of securing a description of school programs in terms of money spent was directed by Mort (1933). Eight New Jersey school districts spending approximately $57, eight spending approximately $115, eight spending about $160, all per weighted pupil, were chosen to represent the low, middle, and high levels respectively in the New Jersey Survey. Groups were matched in terms of size, location, character of community, and range of grades of schooling offered. Objective information, such as salaries, training and experience of teachers, library facilities, supervision, and health services, was collected on the school provisions from local sources and state reports. Schools were observed in terms of extensive check lists, one for elementary grades and one for the secondary grades.

These instruments of evaluation, though comparatively crude, revealed ratings on the following three characteristics to be decidedly related to expenditure level: (a) classroom environment--social and

physical, (b) meeting the varied abilities of children, and (c) selection and organization of materials.

From this study, Mort found that high-expenditure schools in New Jersey generally made more adequate provisions for textbooks, instructional supplies, and libraries. Classrooms were better designed and had better furniture, better trained professional workers employed, and smaller classes were maintained. On the other hand, the lower-expenditure schools employed less well-trained teachers, provided inadequate supplies of books and other instructional materials, and gave little supervision. These schools also had fewer buildings, many of which were considered to be fire hazards.

In his next survey, a year later, Mort (1934) selected 30 towns and cities of Maine. Ten were spending about $30 per pupil, 10 about $51 per pupil, and the remaining 10 about $78 per pupil. Groups were equated on grade level of education offered, type of community, size, and geographical location. This study was considered to be largely one of lack. Descriptions indicated not so much what the Maine high level had, but rather what the lower level of expenditure lacked. Nevertheless, Mort found:

> . . .the findings, all along the line, an improvement in every item as one passes from the low-expenditure, through the middle, to the high expenditure schools. (Mort, 1934, p. 64)

As we go up the scale the number of boys and girls well served increased rapidly. Instruction in the traditional subjects improve, the

opportunities broaden, more and more individuals find an outlet through which they can discover and develop their abilities. Among low level schools those conditions which were especially deplorable related to school plant, physical education, janitorial service, books, materials of instruction, and magazines, all needs which are basic to any kind of adequate schooling. One of the greatest differences among the three levels is the extent and quality of supervisory services. With respect to curriculum, he concluded:

> . . .the only attempts discovered to make the curriculum a living thing, changing with new needs and surroundings, have been found in schools on the high expenditure level. (Mort, 1934, p. 87)

A study of 249 Kentucky school systems was reported by Ferrell (1937), in which he studied the relationship of current expenditure per-pupil to six items that make up what he termed an efficiency index. In this respect his study was closely related to Ayres' study. This study showed a strong relationship between quality and expenditure when quality was defined as the attracting and holding power of the schools, the training and experience of teachers, the pupil-teacher ratio, and the length of the school term. Ferrell concluded that there is a very definite relationship between total current expenditures and educational efficiency.

However, despite the high relationships between current expenditures and measures of educational efficiency, Ferrell tempered his findings by certain cautions which he felt should be applied by anyone. He noted

that some systems ranking high in expenditure level were low in efficiency and that the reverse was true. He noted that some school systems were apparently getting more results than other school systems spending at the same level.

Gay reviewed several studies, some of which were 30 to 40 years old, as well as some in the last decade. He summarized with the statement, "The theme that runs through all of these studies is that quality in education costs money and it must be paid for," (Gay, 1962, p. 56). He also stated:

> Early studies of the relation of school quality to level of expenditure found that better educational results are obtained when teachers with longer preparation are employed; when classes are kept at a reasonable size; when an adequate supply of school texts, library books, and other instructional materials are provided; when schools are open for a full term; and when children attend school regularly and go on to high school. (Gay, 1962, p. 70)

McLure, in his analysis of 61 school districts in Illinois, in which he selected a few characteristics of educational progress that were related to financial support, found that:

> The findings of this chapter suggest high relationship between instructional practices and two basic conditions; size of student population and amount of expenditure per classroom (instructional) unit. The same relationship holds true for instructional equipment and pupil personnel service. (McLure, 1964, p. 79)

Dethy (1964) in comparing 36 school districts in Ohio, on specific categories such as personnel employed, staff characteristics, teachers' salaries and salary schedules, program elements, and teaching materials and buildings, concluded that the school districts of higher expenditure

levels tend to exceed those of lower expenditure levels in quantitative educational returns, although not to the extent reported in previous studies of similar scope. He found that consistent patterns of quantitative educational returns were present to a much greater extent when related to expenditure level than to either size or kind of school district.

Quality education as measured by the scope of the program

Another type of research on the cost-quality relationship in education seeks to go beyond quantitative data on personnel and facilities or test scores as measures of quality. This type of study assumes that to test the inner essence of educational quality one must go into school systems and carefully observe what is going on there. Trained observers, using a check list of many items, go into a school system and into various departments to observe the extent to which such fundamental educational objectives and procedures are found. The score on a school on such an observational guide, in the hands of a trained observer, compared with the level of expenditure is used in studying the cost-quality relationship.

This method of evaluation seeks to appraise various aspects of the educational program. It is cognizant of the teaching of the basic skills and the fundamental areas of knowledge and places emphasis upon good citizenship and the ability to think. In spite of this, it has its

shortcomings. Its reliability depends upon the degree of training of the observers. Another criticism is that it assumes that excellent learning situations, as defined by qualified persons, result in quality educational returns. This method of evaluation seems to rely highly on subjective information.

Grace and Moe (1938) reported on one section of an inquiry into the character and cost of public education in the state of New York. This study was instituted by the Board of Regents. After visitation and examining pupil test results, 43 school systems, with enrollments from 135 to 45,000 pupils per community, were ranked on a five-point scale: highest, above average, average, below average, and lowest. The report does indicate that a rather informal and considerably unobjective method of appraisal was used, which depended to a large extent upon the educational background of field workers who made subjective ratings of school systems on this five-point scale. Nevertheless, despite the somewhat questionable method, the study does represent a careful consideration of the factors that determine a school's quality. The following initial statement in the chapter dealing with educational returns for money spent seems to suggest that the existence of satisfactory instruments for appraisal of public school systems was not known to the investigators:

> It is difficult to determine if high-priced education is unusually high-quality education as it is to determine just how good a school system is. (Grace and Moe, 1938, p. 324)

No controls were placed on school size for various expenditure levels and no account was taken of factors known to affect cost, such as sparsity and cost of living. Nevertheless, the results were not greatly opposed to those of the studies already reviewed.

The inquiry showed that some school districts, especially those in rural areas, had high costs with inferior results. However, these were the exceptions. The study as a whole revealed considerable correspondence between cost and quality. It was found that no low-cost districts got distinctly superior educational returns, and that high educational efficiency is not achieved without high expenditure. The following conclusions were reported:

> High educational efficiency is not achieved without high expenditure, but many districts have high costs and distinctly inferior returns. The groups of schools with superior educational results spreads the greater expenditure over all the items of expense (except transportation) and also devotes a large proportion of the entire budget to direct instruction. The best schools do not have an exceptionally small number of pupils per teacher, but pay a high average salary to the instructors. The best schools were all large, and permitted organization of fairly large classes and rich curriculum. (Grace and Moe, 1938, p. 324)

The Pennsylvania study (Mort and Cornell, 1941) reported a correlation of .587 between educational expenditures and quality of schools. The method of relating cost to quality in the Pennsylvaia study differed from that used in previous studies. It made use of statistical analyses to assess the relationship, whereby previous studies had tended to make use of groups of schools on each of three expenditure levels. They selected 36 Pennsylvania communities and a highly objective instrument

(Mort and Cornell, 1937) was used for appraisal with a scale of 1000 points. It was directed at noting the use by the schools of improved educational practices, 183 items, that came into being largely during the preceding two decades.

Expenditure was but one of more than three score factors studied in relationship to quality as measured. Actually this instrument was designed to use in adaptability studies, and by observation and interviews. It attempted to determine the presence of what were considered to be good practices which had come into the schools during this century. To demonstrate this process, Mort and Cornell, used eight adaptations--kindergarten, reorganized high schools, special classes, homemaking for boys, adult classes, extra-curricular activities, elementary final examinations and supplementary reading.

They concluded that from this study, in general, money was more related to adaptability than to any other single factor.

The Commission on the Legal Structure of Rhode Island Public Education (1941), studied educational returns for money spent on schools. As in the Pennsylvania study, the Mort-Cornell Guide was applied to 38 of the 39 school districts of Rhode Island. The districts were divided into three groups on the basis of their expenditure per weighted pupil for 1939-40. The Guide was filled out by field workers on the basis of interview and observation in a large sampling of schools and obtained information on the degree to which new practices and improvements, common to better school systems, were found in Rhode Island. When

these schools were divided into three groups on the basis of expenditure per pupil, improved practices were found to be most common in the high-expenditure schools, greater use was made of the community as an educational setting and more attention was placed upon individual guidance. On the other hand, in the low-expenditure schools, educational materials were limited and teachers gave little attention to the individual as such.

Many of the items in the scale are not directly traceable to costs. The study recognized that a number of factors, other than expenditures, were involved in producing an alert, modern school system. It concluded, however, that:

> . . .whatever the other conditions may be, they are not sufficiently strong to offset the lifting effect of expenditure. (Commission on the Legal Structure of Rhode Island Education, 1941, p. 24)

An extensive study was made of the educational programs offered by three samples of New York State school systems. Each of three samples contained approximately an equal number of school systems representing high, middle, and low expenditure for the state. For the United States they would be considered to be very high, high, and middle. The same instrument used for the Pennsylvania and Rhode Island study was used, but it was soon discovered that this instrument was entirely inadequate for describing the practices of a well financed school program. Field workers were instructed to take notes on practices within the school that they considered to be good, but were not reflected in the Mort-

Cornell Guide. As previously mentioned, this Guide consisted of several hundred items designed to measure school quality. After observing 87 elementary schools and 23 high schools, in 21 counties, a comparison was made of the quality ratings of each of these groups of schools. The survey found that:

> The quality and breadth of the educational offering of the schools in the high expenditure level are considerably greater than in those not so well supported. . .the most significant effect of the increased expenditure is the emerging of a greater emphasis upon those characteristics of the program that are concerned with the child as an individual. Hence there are more schools to be found in this category which make some provision for individual instruction and the record of the child's development is better kept and is more frequently used by the teachers. Almost all of them use intelligence tests as a diagnostic nature. About twice as great a proportion of these schools make provision for pupils of low or superior ability as either of the other expenditure groups. A similar situation exists with reference to provision for handicapped children. (Strayer, 1945, p. 529)

In Mississippi, McLure (1948) reported on the cost-quality relationship in more than 100 schools. Information was assembled from each school with reference to nearly 200 practices generally assumed to be essentially good for education. The schools were then divided into three groups by expenditure level. In his instrument for describing the schools he selected 153 of the 183 items in the Mort-Cornell Guide then each school was rated on the scale of no, little, some, and very much.

His findings emphasized that low expenditure results in serious losses in educational returns. McLure concluded:

> The kind of education that children get is closely related to the amount of money spent on them. Schools that spend little money on pupils usually have unattractive buildings, often uncomfortable, unsafe, or poorly suited to the needs of the children. There are few books outside the state-adopted texts. There is almost complete absence of teaching supplies and laboratory equipment. The teaching is often poor. The school program consists of little beyond the three R's, poorly taught. There are few activities which contribute to the development of good citizenship.
>
> Where schools spend more money on their students there is a corresponding improvement in conditions throughout the schools and community. There are better buildings, more attractive classrooms, more texts, more equipment, more useful things for children to study and do, and better teaching. Usually the pupils show evidence of more interest in school and more purpose in what they are doing. (McLure, 1948, p. 3)

Concerning factors other than expenditure level which result in high educational returns for money spent, McLure also stated:

> Perhaps most important of all next to expenditure level, there must be in the minds of the laymen and the educator the picture of what constitutes good education. (McLure, 1948, p. 52)

Smith (1954) reported a study dealing with the cost-quality relationship in central rural schools in New York State. These schools were the result of consolidation of several smaller school districts. Smith used the findings of systematic observations of 229 central rural school systems by a group of trained observers. This study sought to find the relation to school quality of five characteristics of each school system, namely, quality of administration, size of school system, type of community, geographic location, and level of expenditure. He concluded that the level of school expenditure was more closely related

to school quality than any of the other four characteristics.

Another study was reported by Griffis in which 44 school systems of Southeast Texas were rated by direct observation of 100 modern education practices in relation to three cost levels. The study reported that the scope of educational programs and services consistently increased with increased expenditure. Griffis concluded:

> Higher cost level schools attract and retain more skillful and better prepared teachers. . .give increased attention to the needs of each individual student. . .make use of a greater abundance of supplies and teaching aids, and also of better quality. They usually have more functionally designed and better equipped school buildings and facilities than other schools. (Griffis, 1955, p. 23)

The New York State Education Department developed an improved method of assessing the quality of school systems. This Quality Measurement Project (1958) yielded significant data on cost-quality relationships in education. Its first report was based on the testing of 100 school systems of the state. Two measures of quality in school systems were used in this project. The first was two batteries of tests developed at the University of Iowa: (a) the Iowa Tests of Basic Skills, which measures achievement in vocabulary, reading comprehension, work-study skills, and arithmetic skills in elementary schools, and (b) the Iowa Tests of Educational Development, a set of tests for secondary schools to measure understanding of basic social concepts, background in natural science, correctness and appropriateness of expression, ability to do quantitative thinking, ability to interpret reading material in social studies and in the natural sciences, ability to

interpret library materials, general vocabulary, and use of sources of information.

A second part of the project made use of the Mort-Vincent-Newell (1946) observational check list, The Growing Edge.

The tests were given to 27,692 fourth-grade pupils in the elementary schools and to 21,178 seventh-grade pupils in junior high school. Some of the findings from the tests in this high per-pupil expenditure state were these:

1. The children in the fourth grade in 58 of 88 school systems tested made average scores higher than is standard on the Iowa tests at this grade level.

2. The children in the seventh grade in 58 of 88 school systems tested made mean scores higher than is standard on this Iowa test at this grade level.

3. There was a strong positive relationship between the level of per-pupil expenditure for instruction in the school systems and the scores on the Iowa tests, both at the fourth and at the seventh grade level.

4. When a statistical technique was employed to eliminate the factor of parental and community influences on the educability of pupils, there was still a significant positive relationship between level of expenditure for instruction and test scores.

This study concluded:

> These consistently positive correlations are obvious documentations of the positive relationship between expenditure and system effectiveness of quality, if one will--in achieving the skills outcomes. The size benefits of additional funds are not automatic, but rather are the result of judicious selection or development of the staff characteristics and program emphasis that money can buy. (Report on the Quality Measurement Project, 1958, p. 64)

From the use of The Growing Edge, a considerable positive relationship was found between levels of educational expenditure and ratings by trained observers on general educational effectiveness. Also, there was a strong positive relationship between the scores made on the three R's and related skills, as measured by the Iowa tests, and general educational quality, according to ratings of trained observers. This applied both at the fourth and seventh grade level.

In summary, this project indicated that in New York State the high expenditure school systems generally do a better job both in teaching the three R's and related skills and in providing a broad educational program, characterized by instruction which capitalizes upon pupil initiative and participation.

Quality education as measured by small-expense items in a budget

Numerous studies show that high educational quality and high expenditure per pupil tend to go together. Most of these studies, however, relate quality and total current expense per pupil, all of which teachers' salaries and maintenance of school plant constitute the major portion.

A new area of study of cost-quality relationship was opened by Brickell (1953). In his analysis of items, other than maintenance of plant and salaries of teachers, in the 1952-53 school budget of 31 communities, he found that small-item expenditures had a considerable relationship to quality. For example, it is essential that school

personnel be provided to help teachers make effective use of teaching aids, such as supplies and equipment. He suggests that good schools do not necessarily spend more money on everything. Often there is a high correlation between some items of current expense and quality of education provided, and a low correlation with other expense items.

Bricknell's research was followed by several similar studies, of which Bothwell's (1958) is noteworthy. This study of 71 school systems representing all sections of the United States involved small-item expenditure and dealt with gains in quality education derived from increasing some small-expense items in school budgets. This study shows that high-quality education is advanced when there is careful balance and discrimination among all items of expenditure, and that overemphasis in one area of spending is bad. His study reported:

> As districts raised current expenditure outlay per pupil, they didn't continue to pour more and more money into textbooks, paper, stencils, roll books, chalks and other basic materials. Instead they began spending more for such items as Audio-visual materials, Physical Education and Health Supplies, Professional Staff Travel, Public Relations Activities, Science Supplies, and similar materials. (Bothwell, 1958, p. 8)

Quality education measured over a long period of time

Furno (1956) reported a study concerned with the effect on school quality of level of expenditure in a community over a 25 year period. He found that the cost-quality relationship was cumulative. The maintenance of a high-expenditure level over a period of years has, according to Furno, "powerful influence upon the type and quality of education

children will receive in a school district for the subsequent decade," (Furno, 1956, p. 47-48).

He feels that this results from several inter-relationships:

> If the expenditure level is high, chances are good that superior teachers will be employed and retained for a number of years. On the other hand, if the expenditure level is low, the chances of employing and retaining superior qualified teachers are diminished. (Furno, 1956, p. 48)

From this study, it seems apparent that drastic increases or decreases in level of expenditure in particular years are less influential in advancing quality than a long range program of school support which is discriminating as to items and adequate in amount.

Money and Achievement Tests

Quality education as measured by achievement tests

Another group of investigators has defined quality as scores on achievement tests, by measuring the extent to which level of school expenditures and scores on pupil achievement tests are related. Standardized tests are given in the three R's and in related skills. The degree to which scores are related to expenditure is then calculated, the natural assumption being that the ability to score high on tests, is quality education.

Providing other factors such as learning capacity of those tested are taken into consideration, low achievement in the basic skills might indicate a lack of quality in an area of major educational purpose. Many educators place heavy emphasis upon this measure of quality, but

it should be pointed out that there are certain dangers in this type of evaluation. Uncritical acceptance of the test scores as sole indicators of educational quality should be avoided. For example, certain pressures and tutoring practices may produce high scores on tests but may result in certain attributes and character traits which are far from desirable. Also, the level of achievement of a school may reflect many other factors other than schooling such as: health, home background, culture experience, intelligence of students, emotional stability, educational background of parents, and skills in passing tests.

Nevertheless, research workers in this area, have turned their attention more specifically to the problem of educational returns, thus hoping to eliminate many presumptions that the first group of researchers were inclined to make.

An early attempt to determine how the character of education is related to expenditure was undertaken by Powell (1933), who sought to answer the question "Does increased expenditure bring increased returns?" by studying 70 one-teacher schools, all in one county, in New York State. He qquated two groups of 35 schools each with respect to intelligence, and as nearly as possible, with respect to supervision and certain community relationships. The schools of Group A spent on the average about 40 percent more than schools of Group B.

Powell then compared scores on (a) an achievement test battery, and (b) a "happiness test," the latter intended to measure increase in

certain aspects of the individual adjustment in school life. He found that:

> There are 93 chances out of every 100 that the schools such as those of Group A. . .are securing greater average achievement in the school work of their pupils than are those of the less well supported group. (Powell, 1933, pp. 20-21)

About the same conclusions were noted in the adjustment in school life as determined by the happiness test. He found that the pupils in top-expenditure schools were on the average 1.44 years advanced over those in the low-expenditure schools at the end of five years of schooling. Pupils in the high-expenditure schools were on the average superior to those in the low-expenditure schools in all nine phases of school achievement measured. Powell estimated that schools in the lowest quartile of expenditures were getting a considerably smaller educational return on each dollar of expenditure compared with those in the top quartile.

Even though Powell's study was a distinctly rural situation, it paved the way for further research in the relationship between expenditures and standardized achievement tests.

Grimm (1938) studied educational opportunities in relation to their cost in 24 elementary districts in Illinois, eight high, eight middle, and eight low expenditure districts. This study was concerned with what effect the cost level influence has on educational offering and environment of elementary school children in small city schools, which had an enrollment from 251 to 495. Schools in the counties surrounding

Chicago were not included. As part of his study Grimm used a series of achievement tests. Seventh grade children were tested in reading, health and geography. Intelligence tests were also given to every student.

He then compared level of expenditure with scores on tests of pupil achievement and type of educational opportunity provided. On tests of achievement he found that the language scores of pupils improved with the cost level as did reading and arithmetic scores. Reading and arithmetic scores were lowest in the low-cost schools. These scores improved markedly in the middle-cost schools and were still higher in high-cost schools. Geography showed a steady rise with expenditure. The one surprise in the list is that the health test in the eighth grade showed relatively little difference. Perhaps the health test failed to test what had been taught in the course.

Generally, he found that high-expenditure schools offered more opportunities in music, more books, better libraries, better trained teachers, more specialists, more and better physical and health education, more extra-curricular acitvities, better buildings, and smaller classes.

In 1954, the New York State Education Board carried on a study in which about 500 persons observed classroom practices. Over 100 school systems were ranked in five groups as to test scores and provision for such educational objectives as health, good citizenship, ability to think, and development of individual pupil ability and talent.

The top-expenditure school systems averaged highest in educational achievement as measured by standard tests. Children from top-expenditure school systems at the sixth-grade level exceeded on the average those from the lowest-expenditure systems by a year and three months in arithmetic, a year and seven months in reading vocabulary, and a year and nine months in reading comprehension. Generally speaking, the schools that had the most comprehensive programs for attaining the broader elementary school objectives as well as achievement in the three R's were expending more per pupil. These higher expenditure school systems were making better use of such facilities as television, radio, books, and were making the study of music, art, and dramatics an integral part of the instructional program. They were using the more effective teaching methods. One of the major findings of this study was that, "the schools which achieve the highest mastery of essential skills and do the most to promote all objectives cost the most," (New York State Educational Conference Board, 1954, p. 2).

A study made in Connecticut reported little relationship between pupil achievement as measured by tests and per pupil expenditures. It concluded:

> The findings that more dollars, per se, do not necessarily provide better education, may, after further thought, be very profitable to those coping with school problems. There are other factors than just more dollars needed and more study is necessary to isolate these controlling factors and determine the wisest expenditure of money.
>
> Certainly these findings do not indicate that there should be a reduction in the rate of increase of teacher's

> salaries. Such a step would affect moral and common sense which says that any such step would be detrimental to the program of public education. (Connecticut Citizens for the Public Schools, 1957, p. 7)

At the high school level, Bloom and Statler (1957), of the University of Chicago, reported an extensive study of factors associated with educational achievement as measured by the Tests of General Educational Development in composition, mathematics, English, social studies, natural science, and literature. According to Bloom and Statler:

> These tests were designed to measure as directly as possible the attainment of some of the ultimate objectives of the entire program of education. (Bloom and Statler, 1957, p. 295)

Bloom tested 38,773 seniors in 834 high schools in 48 states in 1955 and the two investigators compared these results with those obtained by Professor E. F. Lindquist of the State University of Iowa in 1943 when he tested 35,330 seniors from 814 high schools in the 48 states, (Bloom, 1956).

The four major conclusions reduced from this comparison were:

> (a) The difference among the states on the Tests of General Educational Development are as great in 1955 as they were in 1943. Although they have had the same amount of formal education, the high-school seniors in the lowest states are at a great disadvantage when contrasted with the seniors in the top states.
>
> (b) The difference among the states on the GED tests are highly related to differences among the states in financial support for education and in level of formal education in the adult population. These relations, which are clearly present in the 1955 study, are also evident in the 1943 study.

> (c) High-school Seniors from the great majority of states have improved on the GED test from 1943 to 1955, although the amount of improvement varies from state to state.
>
> (d) The relative shifts in the ranks of the states on the GED tests are related to the relative increase both in financial support for education and in level of education among the adult population. (Bloom and Statler, 1957, p. 220)

The foregoing show that students on the average make higher scores on tests in the three R's in elementary schools and in the academic subjects in high schools in high expenditure as compared with low-expenditure school systems.

Bloom and Statler's study resulted in several significant findings in addition to those directly related to the level of expenditure and educational quality. It was found that differences in educational achievement among the states were sufficient so that:

> . . .the student from the top state is likely to have a considerable advantage over the student from the bottom state. . .a competitive advantage that is likely to be translated eventually into differences in economic position, social position, and cultural status. (Bloom and Statler, 1957, p. 208)

Also, their study implied that several factors appeared to be responsible for quality in educational results. For example, there was a high correlation between the level of formal education of the adult population in a state and the scores made by its high school seniors in both years. However, this correlation was not as high in either year as the correlation between pupil achievement scores on the GED tests and the level of school expenditure. Bloom and Statler had this to say

concerning other factors as well as school expenditure on pupil achievement:

> While other variables may also be associated with the changes on this battery of achievement tests, we may conclude that the level of educational outcome of the public schools, as measured by the performance of high-school Seniors on the GED tests, is related to the level of educational input in terms of financial support for education and the value placed upon education as reflected by the educational status of the adult population. Improvement in the level of learning of the students in a state is likely when there is increased financial and other support for education in the state. (Bloom and Statler, 1957, pp. 220-221)

Summary

From this review of literature, it is evident that variations in school expenditures have long occupied the attention of the public, school officials, and school finance experts. These variations have been investigated over a long period of time, and by many able researchers. A major barrier to the goal of equal educational opportunity has been the difference in the ability of local school districts to provide a comparable, if not equal amouht of funds per child.

However, data on expenditure levels relative to educational opportunity and returns have not been easy to obtain. Existing expenditure levels apparently are sometimes the result of legislation, tradition, policies, adjustment to pressure and many other intangible factors not always understood.

Generally speaking, research has been limited to the testing of hypotheses regarding the valid, reliable, and objective data which can

be obtained in a reasonable time with available resources. Evidence from these empirical studies show that in schools where you spend more you get more.

A report by Ross of more than 150 research studies made prior to 1951 was analyzed. He emphasized that school quality is a complex concept, but that the most powerful of all factors which influence the quality of schools is in the level of financial support. He concluded:

> Three hundred factors have been studied for their effect on schools; of all of them, the amount of money which a school district has to spend. . .for teachers, for supplies, equipment, apparatus, books. . .is most (important) single factor. (Ross, 1958, p. 362)

In a recent study concerning teaching materials in Utah's public schools, Catmull's findings were consistent with findings from other studies reviewed. He stated:

> A positive relationship has been established between the cost of education and the quality of the educational program. There has been no single factor yet discovered that determines the quality of education in a school system as decisively as does the per pupil expenditure. (Catmull, 1965, p. 32)

Evidence presented in this review of related studies indicate that schools that spend the most money on their programs get proportionally greater returns than those that spend less. It appears that certain expenditures can be so low that the effectiveness of the school program is seriously curtailed or that expenditures may be so great that money is actually wasted. On the other hand, something not quite so obvious is the optimum amount of money that a district should spend on its

educational program in order to realize returns. Perhaps the results achieved by the schools cannot ever be accurately measured in dollars and cents, but continual research and inquiry into the "input" versus "output" question is vital to all concerned.

This review of related studies indicate that several studies have dealt with the correspondence between school expenditures and pupil scores on standard tests of achievement. However, each of these studies have approached this complex problem from a somewhat different perspective. Powell's study (1933) involved a strictly rural situation in New York in which he administered achievement tests to pupils in 70 one-teacher schools. The study conducted by the New York State Educational Conference Board (1954) included over 100 school systems in New York and included achievement tests as well as 500 trained persons observing classroom practices. Bloom and Statler (1957) tested senior pupils from all 48 states as they studied factors associated with educational achievement between students from the 1943 and 1955 school years. Grimm (1958) tested pupils in 24 elementary school districts in Illinois and studied the effect that the cost level had on educational opportunities as well as achievement gains.

All of these and similar studies have compared pupil achievement between the various states, districts, or schools within a district with the duration of the study usually extended over one year.

Therefore, the need for the writer's proposed study is even more pronounced because the design of the study is different from any of the

previous conducted studies. The proposed longitudinal study is unique in as much as it provides the rare opportunity to involve a district that has undergone a "rags to riches" transition during the past 15 years, thereby, furnishing an ideal setting for additional research into the comparison of achievement gains of students among three different expenditure years.

Data from this study will report changes in the San Juan School District as a result of money and we would expect to find the following things:

1. As additional money became available and provision for learning opportunities changed, education expenditures increased.

2. As San Juan spent more money on its schools, they were generally more able to employ and retain better trained teachers, provide more functionally designed and equipped facilities, instructional materials, and other aids.

3. Changes occurred from 1951 to 1965 in teacher certification, teacher turnover, and the number of teachers possessing a professional degree.

4. Changes in salary schedules occurred from 1951 to 1965.

5. The teacher-pupil ratio was reduced from 1951 to 1965.

CHAPTER III

METHODS AND PROCEDURES

Comparison of School Expenditures

If you put two boys back to back, comparison will prove that one (if either) is taller. Compare two textbooks. It's a little more complex, but you may be able to see that one is better. How about school expenditures? Can comparison prove anything? Dr. Paul Mort, one of the Nation's foremost authorities on educational finance and spending, says yes. With his more than 40 years' experience in statistical analysis and research, he feels that a comparison of school expenditures will yield valuable information about the quality of a district. Also, he feels it is a step in the right direction by finding how other districts have spent it to a great advantage. He states, "If you use a little common sense, expenditure level can be one of the best quality indicators a district has at its disposal," (Mort, 1962, p. 129).

A description of San Juan's expenditures from 1951 to 1965 was obtained from the previous and forthcoming publication of the State School Office, The Utah School Report, published biennially. This report categorizes school expenditures into the following areas: administration, instruction, other school services, operation of plant,

maintenance of plant, fixed charges, total current expenditures, capital outlay, debt service, school lunch and total expenditures. It further subdivides instruction into salaries, textbooks, library books, teaching supplies, and other expenses.

The writer compared San Juan and Utah's yearly per pupil costs in average daily attendance for each of these 11 expenditure categories and described each area as it related to providing a climate that was conducive for "opportunities to learn."

Since no itemized expenditure records were maintained by the State School Office nor the local school district for each school within the district, it was mandatory that expenditures in this study be expressed as a district expenditure. In defense of this procedure, it should be pointed out that each school is alloted a specified amount per student each year for instructional supplies, textbooks, and library books. This amount is approved and earmarked in the annual school district budget. Therefore, with the exception of professional salaries, it is likely that instructional expenditures per pupil have been constant between the schools in the district over the past several years.

Population and Sample

As previously stated, San Juan School District is the largest in square miles of the 40 districts in Utah. It is extremely isolated from the populated center of Utah and presently obtains 95 percent of its wealth from the mineral and petroleum industry in the county.

During the past 15 years the average daily attendance has increased from 825 to 1873, with 104 teachers presently employed. Druing the 1964-65 school year, the district consisted of nine elementary schools, varying from a one-teacher school with seven students to a twenty-teacher school with 450 students. Two modern high schools, fully accredited by the Northwest Accrediting Association, house 750 students from grades 7 through 12.

It was the original intent of this study to administer standard measures to pupils throughout the district, but after careful examination, it was discovered that during the past decade the schools in the south end of the district have experienced an influx of Indian pupils from the Navajo Reservation. The 1963-64 enrollment indicated that the schools in the south end of the district consisted of 19 percent Indian pupils as compared to 4 percent in 1953. The majority of the Indian pupils enter school unable to comprehend or speak the English language and often are chronologically two or more grades behind their own grade level. Experience has shown that many of the Indian pupils fail to fall within the established minimum norms of a standardized test. Their inability to read makes it extremely difficult to assess their actual achievement gains.

Hoping to eliminate this cultural variable, two representative schools from the north end of the district were selected for comparison of achievement gains. These two schools, the Monticello Elementary and the Monticello High School, are relatively free of such known

cultural variables. The average daily attendance of the elementary school has increased from 229 in 1951 to 376 in 1965, and from 151 to 306 in the high school.

The availability of reliable test data for all three expenditure years was another determining factor in the selection of schools for this study. Prior to 1958 the district did not employ professional guidance personnel and the administration of a standard measure was left to the discretion of each principal. Fortunately, the principal of the Monticello High School was a former counselor and recognized the need for and proper use of standard measures in a school system. He alone was responsible for the administration of achievement tests to all eighth, eleventh, and twelfth grade students within his school. A non-certified lady was employed part time to administer and supervise the testing program in the elementary schools during this same period.

Therefore, after careful examination of Monticello's testing programs, pupils from the third, fifth, sixth, eighth, and eleventh grades were selected for comparison of achievement gains for the three different expenditure periods.

Standard Measures

In determining if students achieve significantly higher scores on standard tests of the three R's in a district that rapidly changed from a low-expenditure to a high-expenditure district, two standard measures were employed. The 1950 edition of the California Achievement Test

provided achievement scores and the California Short Form Test of Mental Maturity provided student intelligent quotient scores to be used in the statistical analysis.

The California Achievement Test is the most widely used achievement test in Utah and it is also used extensively in most other states, (Achievement of Utah Students, 1964, p. 4). It has long been recognized as one of the best instruments in this category. The fact that it is standardized on grades one through fourteen makes it valuable in securing data on all grades throughout a school system.

The test offers 10 different scores; reading vocabulary, reading comprehension, total reading; arithmetic fundamentals, arithmetic reasoning, total arithmetic; mechanics of English and grammar, spelling, total language; and total for the battery. The continuity in interpreting scores over a wide range thus afforded is immediately useful at all levels and provides an aid to those who wish to plan curriculum or evaluate programs that stress continuous growth of all students at all grade levels with respect to basic skills and common language.

A review of this test found in the Fourth Mental Measurement Yearbook summarizes with the following:

> The California Achievement Tests are useful for a general survey of those aspects of reading, arithmetic, and language commonly measured by tests of general achievement. Within this framework they are probably as accurate and well constructed as other widely used achievement batteries. They have no equal for ease of administration, scoring and recording of data. (Buros, 1953, p. 6)

The California Short Form Test of Mental Maturity is available on five levels; pre-primary, primary, elementary, intermediate, and advanced. It tests four areas: spatial relationships, logical reasoning, numerical reasoning and verbal concepts. The test provides mental ages, intelligent quotient scores, and percentile norms for both language and non-language sections as well as for the total. Percentile norms for the four factor scores are also provided. The range of the battery is from grades one through college and adult, and the test as a whole provides a very good instrument for measuring "capacity." A review of this test battery found in the Fourth Mental Measurement Yearbook states:

> Scores are obtained for total mental factors, language factors, non-language factors, spatial relationships, logical reasoning, numerical reasoning, and verbal concepts. Total score reliabilities range from .02 to .95, and part-score reliabilities from .81 to .95 being generally higher at the upper age levels. The subtest inter-correlations, mainly from the .20's to the .40's, give some support to the differential interpretation of the profiles. Norms are based on very large groups that were controlled with respect to age and school progress. No evidence is given, however, about the geographic or socioeconomic distribution of the normative subjects. Validity is defended in terms of high correlation with the Standard-Binet, but the exact coefficient is not stated. (Buros, 1953, p. 282)

Collection of Test Data

Three different periods of time, 1953, 1958, and 1965, considered to be representative of low, transitional, and high expenditure levels, were compared for significant differences on student achievement gains.

Therefore, the collection of test data for this study was a two-fold problem. First, it was necessary to collect the data on all students in the third, fifth, sixth, eighth, and eleventh grades who attended the Monticello schools in 1953 and 1958.

The writer obtained this data from each student's cumulative folder. Four achievement scores were obtained for each student, namely; reading, arithmetic, language, and total for battery. Intelligent quotient scores, as determined by the California Test of Mental Maturity, were obtained from the student's cumulative folders.

The second step in collecting test data was to administer the same standard measure that had been administered to the 1953 and 1958 pupils, that being the 1950 edition of the California Achievement Test.

The following action by the local Board of Education made it possible for this proposed testing program to materialize:

> A motion was made by member Redd, seconded by member Johnson and carried that Mr. Maughan be authorized to give achievement tests to certain grades during the present school year, these tests to be administered at no cost to the school district except the time of Mr. Hogge and Mrs. Bartell for assisting in the administering of these tests. The results of these tests will be used in Mr. Maughan's dissertation. (School Board Minute Book, December 14, 1954, p. 50)

Following this authorization, an orientation meeting was held with all school personnel directly involved in this testing program. Present at this meeting were the elementary supervisor, elementary principal, secondary principal, school counselor, and classroom teachers. The purpose of this study was discussed and plans formulated to coordinate

the testing schedule so as to be compatible with the regular school program, with the least possible amount of external contamination. Special emphasis was given to correlate the schedule so that the test dates would approximate those of the earlier two expenditure periods. This was not too difficult since most of the previous achievement testing had been done during March.

By special request from the writer, the California Test Bureau located and furnished sufficient copies of the 1950 edition of the achievement test for this study. Upon receiving these tests, another planning meeting was held with all school personnel involved in this study. Since the elementary supervisor had administered the tests to all third grade pupils in Monticello during the earlier two expenditure years, she was assigned this same responsibility for the 1965 school year. The school counselor wholeheartedly accepted the responsibility to administer the tests to the remaining four grades. Instructions were such that testing commenced at 9:00 A. M. and finished during the early part of the afternoon, with ample time allowed for rest periods and the noon hour.

As had been the district policy, all third grade students wrote their answers in the test booklets which were corrected by the elementary supervisor. The remaining four grades used answer sheets which were corrected by the writer. The results were then recorded on the class record sheet. Table 1 shows the number of students involved in the three different expenditure years:

Table 1. The total number of pupils by grade and year that were used for comparison of achievement gains

Grade	1953	1958	1965	Totals
3	44	70	64	178
5	38	50	55	143
6	38	54	54	146
8	39	56	55	150
11	31	43	40	114
Total	190	273	268	731

Analysis Procedure

The form in which the hypotheses of this study are stated and the nature of the data collected indicates that an appropriate statistical technique to employ in treating these data would be analysis of covariance. This technique, which makes an adjustment in the final score to compensate for initial group differences, seems especially appropriate since two of the three groups of the sample consisted of classes of students who were tested prior to the beginning of this study and random sampling techniques were not able to be used. Intelligent quotient scores were obtained for each student and were used as initial test scores in the statistical computations.

The various forms and uses of hypotheses are explained exceptionally

well by Dr. Borg in his following comment:

> The student is sometimes confused by the null hypothesis because it appears to him senseless to hypothesize the exact opposite of his expectations. This is a disadvantage of the null form, because the researcher's expectations, based as they are upon considerable insight into other research and theory, often make the study clearer to the person reading the research report. Some researchers overcome this problem by using both a research hypothesis that reflects their expectations based on theory or previous research and a statistical hypothesis that is usually in the null form and is set up to make evaluations of the research hypothesis statistically more precise. (Borg, 1963, p. 32)

Since Dr. Borg's suggestion seems applicable to this study, an analysis of covariance was employed to test the following null or statistical hypotheses:

1. There are no significant differences in the total achievement gains among three groups of students selected from the total school population for three different expenditure years.

2. There are no significant differences in the achievement gains in reading, arithmetic, or language among three groups of students selected from the total school population for three different expenditure years.

3. There are no significant differences in the achievement gains within the same grade level for students selected from the total school population for three different expenditure years.

The hypotheses asserts that the achievement scores are in reality drawn from the same normally distributed population of students, and the conditions among years will differ only through fluctuations of

sampling.

To test the validity of these hypotheses, a variance ratio, called F, was computed by using the analysis of covariance statistical technique. This F value furnishes a comprehensive or overall test of significance of the difference among means. However, a significant F does not tell which pairs of means differ significantly, but that at least one mean is reliably different from some other mean.

If the F value was found to be significant, the Duncan's Multiple Range Test was used to break the total variance down into components to test the separate mean differences.

CHAPTER IV

FINDINGS AND DISCUSSION

Assessed Valuation

A cost-quality study was conducted in Kentucky to identify criteria that could be applied to all school districts as accurate quality indicators. From this study eight factors were retained as valid quality indicators, of which six were directly related to school expenditures. It concluded that the total amount of money a district spends--its net current expenditures--shows up as the number one quality factor, (School Management, 1965, pp. 79-83).

It is conceded that schools must operate regardless of economic trends and for a school district to be considered a high-expenditure district, its tax base must be sufficient to provide revenue. This has not always been the case with San Juan. Generally speaking, San Juan has been considered an agricultural area and until the recent uranium and oil discoveries, derived its school revenue largely from property taxes. However, with the advent of mineral and petroleum discoveries, and valuation of the county rose rapidly. For example, in 1960 85 percent of Utah's petroleum production (31,394,000 barrels) valued at about $88,000,000 and 85 percent of Utah's uranium ore was produced in San Juan County. The value of the mineral production was $121,937,967,

placing San Juan the second highest county in total mineral production and the state's leading oil producer, (Mineral Yearbook, 1960, p. 1040).

Tables 2 and 3 illustrate the fabulous "rags to riches" growth the county has experienced during the past decade. Careful examination of Table 1 shows that the assessed valuation of San Juan increased from $2,643,504 in 1950 to a high of $132,483,785 in 1960. In 1965 it dropped to $90,209,750 which was still an increase of 3313 percent since 1950, as compared to an 80 percent increase for the state of Utah for the same period of time.

Table 3 shows the trend in assessed valuation per census child in San Juan and Utah. It should be noted that San Juan experienced a $45,052 increase in assessed valuation per census child from 1950 to 1963 while the State of Utah during the same period had a decrease of $81 per child.

Table 2. The assessed valuation of San Juan and the State of Utah from 1950-1965, and percent change from 1950

Year	Assessed valuation San Juan	Percent of 1950
1950	$ 2,643,504	100
1951	3,179,833	120
1952	3,456,607	131
1953	3,389,249	128
1954	3,850,986	146
1955	6,301,153	238
1956	13,049,620	494
1957	22,316,518	844
1958	37,415,398	1415
1959	93,987,348	3555
1960	132,483,785	5011
1961	123,891,559	4687
1962	105,962,344	4008
1963	96,671,295	3657
1964	94,746,659	3584
1965	90,209,750	3413
	State Assessed Valuation	
1950	848,379,646	100
1965	1,529,901,768	180

Table 3. The assessed valuation per school child for San Juan and Utah

Year	San Juan school census	Assessed valuation per census child	
		San Juan	Utah
1950	1020	$ 2592	$5268
1951	1001	3177	5473
1952	940	3677	5719
1953	1081	3135	5841
1954	1063	3623	6121
1955	1274	4946	5542
1956	1490	8758	5636
1957	1837	12148	5784
1958	2054	18215	5812
1959	1810	51927	5542
1960	1917	69109	5392
1961	1900	65206	5251
1962	1959	54090	5160
1963	2029	47644	5187
1964	2149	44088	5171
1965	2104	42875	5231

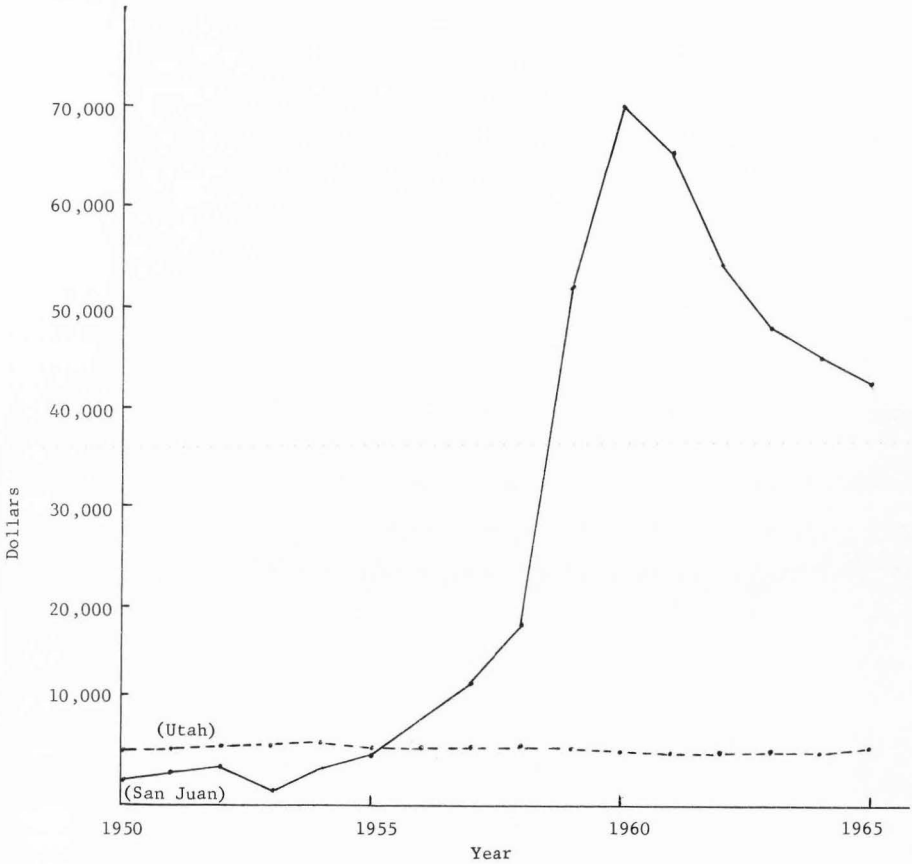


Figure 1. Assessed valuation per school child for San Juan and Utah, 1950-65.

School Expenditures

Administration

Administrative expenditures include such items as: expense of the board of education, superintendent's office, professional assistants, school elections, and office of the clerk of the board.

Administrative expenditures per pupil in average daily attendance have been considerably higher in San Juan than in Utah. However, it should be remembered that San Juan is a small school district, yet it must maintain practically all of the services and facilities that a larger district does, such as a superintendent, board of education, administrative facilities, clerk, and secretary.

Table 4 reveals that during 1951 San Juan spent $10.20 per pupil for administration as compared to $6.07 for Utah. By 1965 this expenditure for San Juan had increased to $14.33 as compared to $9.20 for Utah, or an increase of 140 percent and 152 percent respectively.

In 1956 San Juan employed their first full time elementary supervisor and an assistant superintendent in 1958. However, according to school district policy, the salaries of these two professional assistants have been charged to instruction rather than administration.

Table 4. Administrative expenditures per pupil in average daily attendance for San Juan and Utah

Year	San Juan	Utah
1951	$10.20	$6.07
1952	10.30	6.21
1953	10.10	6.27
1954	10.72	6.48
1955	9.29	6.06
1956	10.04	6.42
1957	12.65	8.45
1958	12.26	7.72
1959	11.13	7.72
1960	14.42	7.99
1961	12.94	8.35
1962	12.83	8.26
1963	14.24	8.52
1964	16.00	8.97
1965	14.33	9.20
	Percent Increase Since 1951	
	40	52

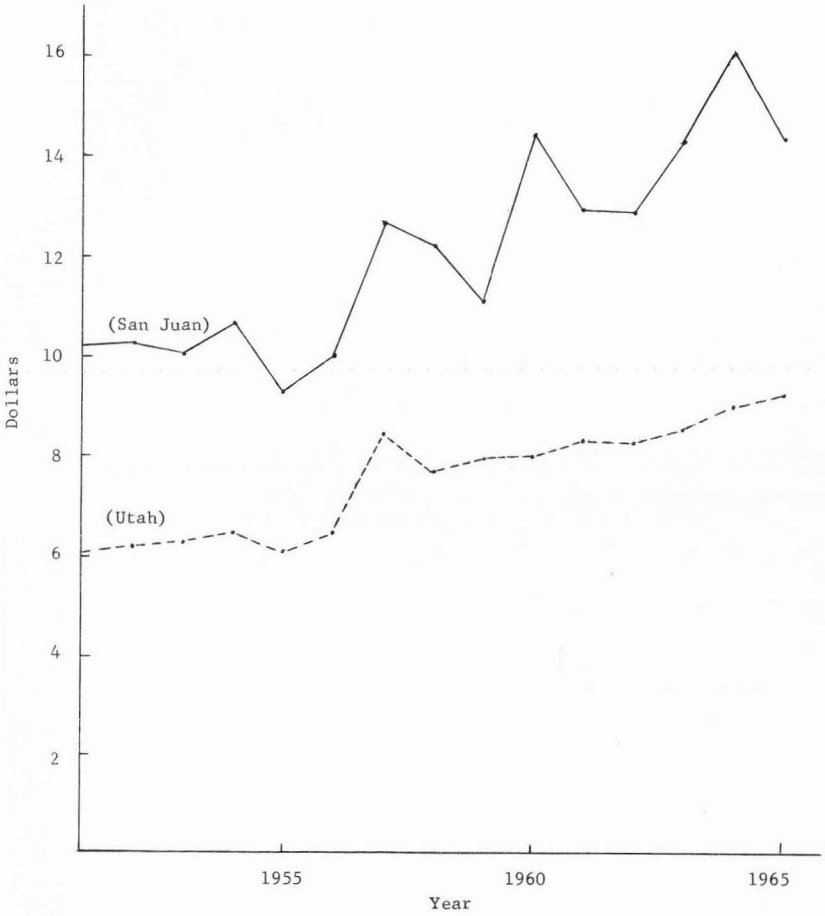


Figure 2. Administrative expenditures per pupil in average daily attendance for San Juan and Utah, 1951-65.

Instruction

The purpose of schools is for instruction and a good instructional program is an asset to a school system. Such niceties as clean new buildings, available bus transportation, and complete health service may be desirable, but they do not serve the primary purpose of the schools. Expenditures for instruction constitute the major portion of every district budget. No school throughout the Nation spends less than 55 percent of its budget for instruction and many spend more than 90 percent, (School Management, 1966, p. 126). Because expenditures for this purpose directly affect what is being taught and how well the teaching is being done, instruction could very well be considered the heart of the school program.

Under budgetary procedures, instruction is listed as one of the major categories under net current expenditures and is further sub-divided into teacher's salaries, textbooks, library, supplies, and other services. Because of the presumption between "opportunity to learn" and instructional expenditures, each of these five sub-categories were analyzed.

As one examines the instructional expenditures in Table 5 it appears that prior to 1959 there was little variation between San Juan and Utah's instructional expenditures. However, after this time, the differential widened and by 1965 San Juan was spending $388 per pupil which was 23 percent more per pupil than Utah spent.

Table 5. Instructional expenditures in dollars per pupil in average daily attendance for San Juan and the State of Utah

Year	San Juan	San Juan's rank	Utah
1951	$131	26	$129
1952	131	27	139
1953	153	24	145
1954	159	19	150
1955	158	28	160
1956	164	30	166
1957	175	22	172
1958	205	25	206
1959	231	13	212
1960	313	4	228
1961	333	4	234
1962	343	4	246
1963	352	3	256
1964	376	6	291
1965	388	6	300
	Percent Increase Since 1951		
	196		133

Teachers' average annual salaries. In comparing San Juan's and Utah's average annual salaries paid to teachers, it is interesting to

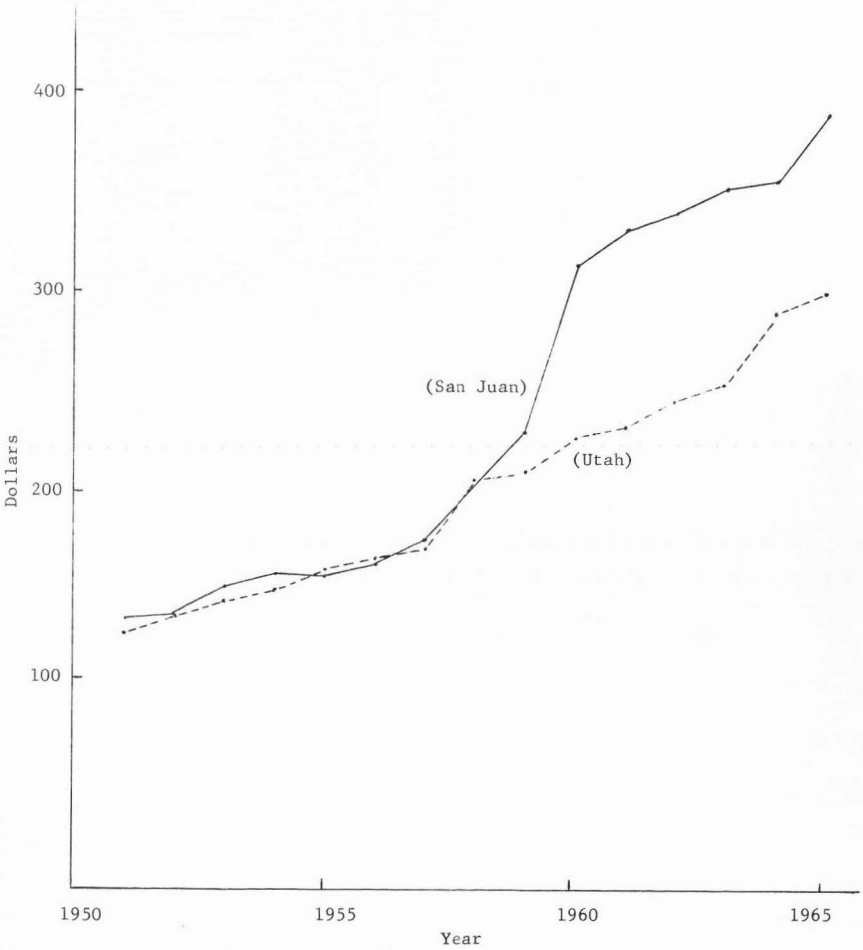


Figure 3. Instructional expenditures per pupil in average daily attendance for San Juan and Utah, 1951-65.

note from Table 6 that prior to 1960 San Juan ranked near the bottom of the 40 Utah districts. However, from 1959 to 1961 San Juan's ranking changed from 35 to 2.

Table 6. San Juan and Utah's average annual salary for teachers (1951-65)

Year	San Juan Salary	San Juan Rank	Utah
1951	$2568	36	$3030
1952	2795	39	3229
1953	2927	38	3428
1954	3117	39	3539
1955	3198	39	3827
1956	3196	40	3859
1957	3311	38	3986
1958	3788	39	4577
1959	4273	35	4688
1960	4926	13	4914
1961	5320	2	4947
1962	5411	2	5125
1963	5637	2	5105
1964	6101	5	5881
1965	6370	2	5924

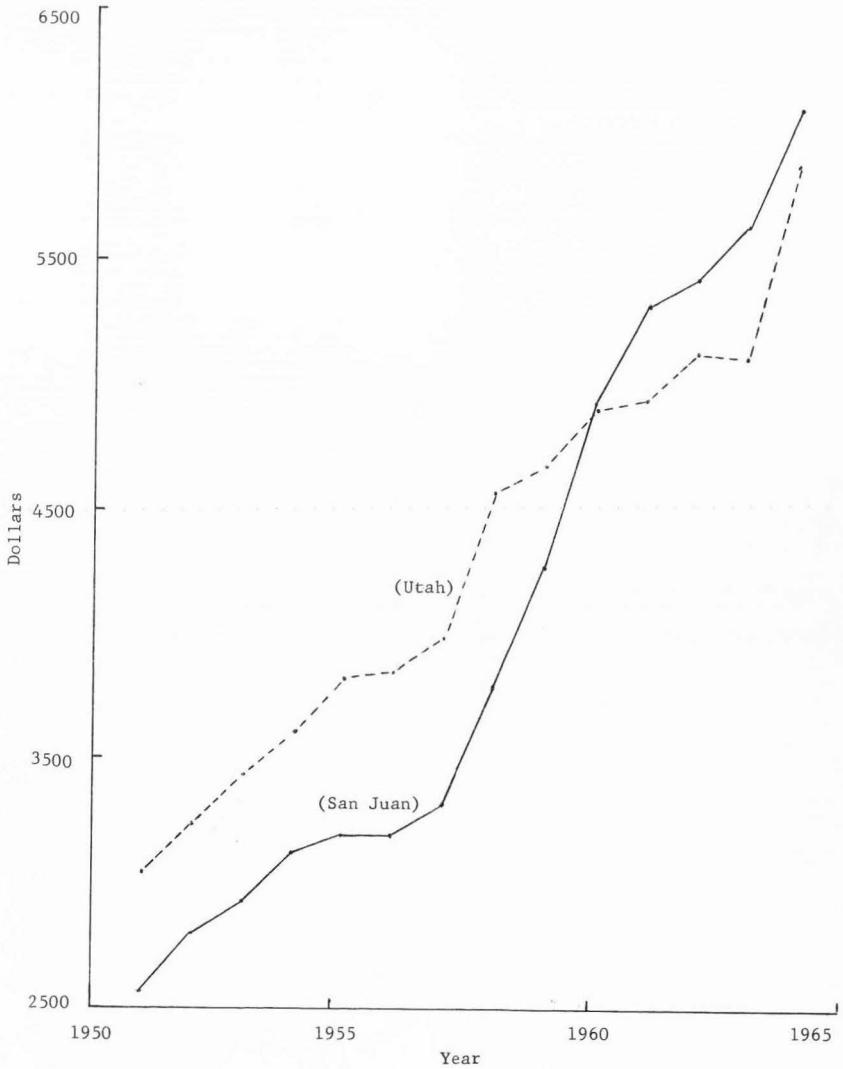


Figure 4. Expenditures for teacher's average annual salary for San Juan and Utah, 1951-65.

Examination of Table 23 reveals that during this same three year period the beginning salary for a bachelor's degree in San Juan increased from $4,000 to $4,800 as compared to Utah's average minimum salary increase from $3,660 to $3,900. During this same period the maximum salary for a bachelor's degree in San Juan increased from $5,300 to $5,513. In 1961 the maximum salary differential for a bachelor's degree between San Juan and Utah was $987 and $1,200 for a master's degree. Each year thereafter San Juan's salary schedule increased and resulted in a consistently higher expenditure for salaries for teachers.

Textbooks. Textbooks in this study is defined to coincide with the term used in the 1965 Utah Textbook Adoption. It refers to books or other systematically arranged instructional materials which because of their potential value for implementation of applicable State courses of study may be used as principal sources of study material for a given course or courses.

The textbook is still perhaps the most important single source used by pupils, although modern teachers no longer use a textbook as the sole source of information.

As soon as one begins to study past school budgets and programs with the intent of gaining information regarding the expenditure for certain items, it becomes readily evident that school accounting procedures do not facilitate the gleaning of certain specific information. Also, because of the transition San Juan has undertaken in the past decade, it is difficult to get specific facts about the name and

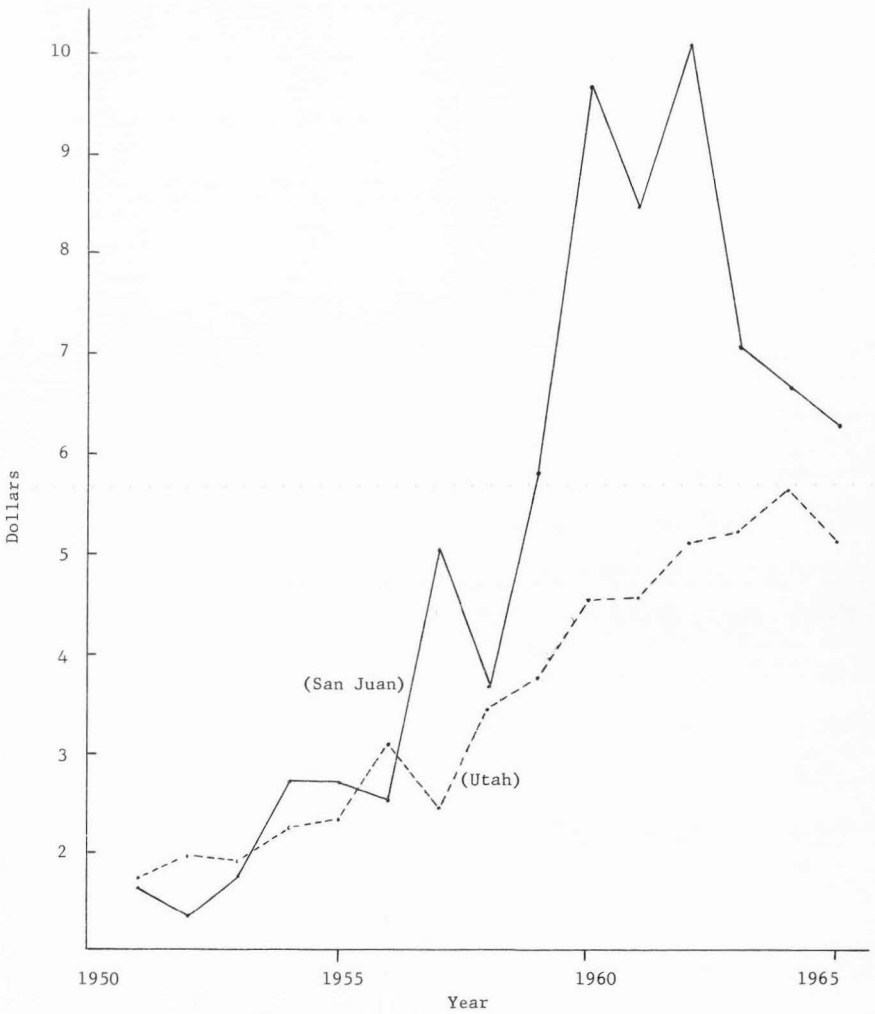


Figure 5. Textbook expenditures per pupil in average daily attendance for San Juan and Utah, 1951-65.

quality of texts that were used over the past several years. However, conversation with teachers indicates that in the early 1950's it was not uncommon to use the same books well beyond their adoption date. Also, because of lack of money, seldom did the district provide sufficient textbooks in all areas of the curriculum. Today, every classroom is supplied with current textbooks in every department.

Table 7 reveals that San Juan's textbook expenditures per pupil were below Utah's in 1951, slightly higher in 1958, almost double in 1962, and 19 percent higher in 1965. Table 7 also shows that for the last four years there has been a continual decrease in San Juan's textbook expenditures. A possible explanation of this decrease is that the district's textbook inventory reached its peak in 1962 and thereafter textbooks were purchased as they came up for adoption.

Library. Library expenditures per pupil in San Juan increased from a meager $.15 in 1951 to a high of $6.17 in 1960 and decreased to $3.85 in 1965. This compares favorably to $.07, $1.26, and $2.07 for the State of Utah.

Table 8 shows that San Juan's library expenditures were slightly below Utah's from 1952 to 1956. However, the next year it increased from $.18 per pupil to $3.54. This substantial increase was a result of a policy adopted by the local school board that provided $4.00 per enrolled pupil for library expenses. This was a real boon to the library program and thereafter expenditures continued to increase. Examination of San Juan's 1959 school budget shows that only $4500 was

Table 7. Textbook expenditures per pupil in average daily attendance for San Juan and Utah

Year	San Juan	Utah
1951	$ 1.65	$1.73
1952	1.39	1.97
1953	1.78	1.91
1954	2.71	2.27
1955	2.73	2.32
1956	2.52	3.10
1957	5.05	2.44
1958	3.67	3.45
1959	5.88	3.77
1960	9.66	4.55
1961	8.46	4.57
1962	10.04	5.11
1963	7.03	5.23
1964	6.61	5.63
1965	6.29	5.12
	Percent Increase Since 1951	
	281	195

Table 8. Library expenditures per pupil in average daily attendance for San Juan and Utah

Year	San Juan	Utah
1951	$ .15	$ .07
1952	.18	.50
1953	.17	.45
1954	.16	.50
1955	.50	.60
1956	.18	.63
1957	3.54	.67
1958	3.62	.78
1959	2.12	1.04
1960	6.17	1.26
1961	5.18	1.29
1962	4.26	1.46
1963	4.53	1.57
1964	4.07	1.86
1965	3.85	2.07
	Percent Increase Since 1951	
	2467	2857

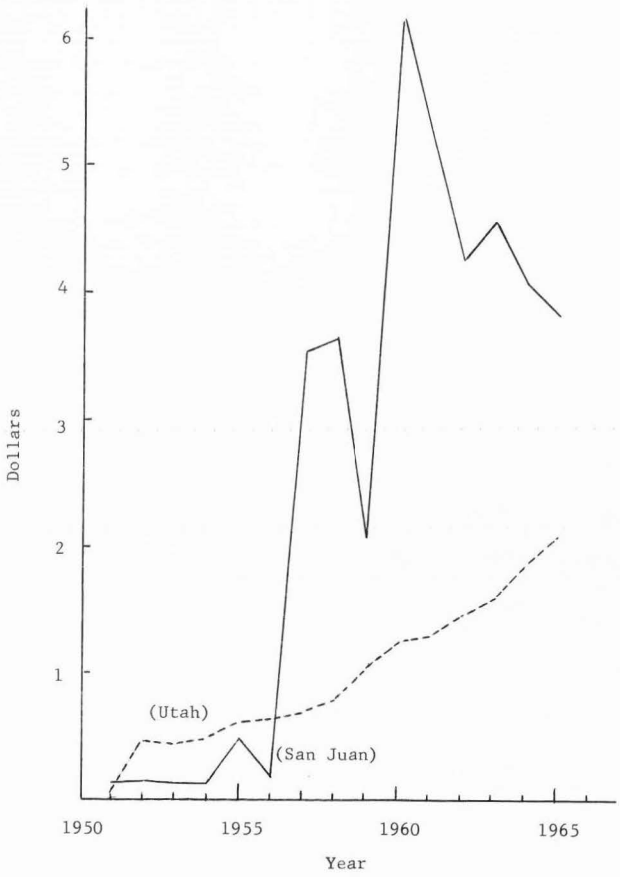


Figure 6. Library expenditures per pupil in average daily attendance for San Juan and Utah, 1951-65

budgeted for library, which was $2000 less than the previous year and $5500 less than 1960. From the $4500 budgeted only $3879 was expended, which accounts for the sharp decrease in library expenditures during 1959.

Instructional supplies. This term refers to material items of an expendable nature that are consumed, worn out, or deteriorated in use or items that lose their identity through fabrication or incorporation into different or more complex systems, (Reason, 1957, p. 223).

Supplies are necessary tools for teachers to use in their instructional program. They must be available when teachers are ready to use them. Recently, San Juan has been liberal in their disbursement of money for instructional supplies. Each year all schools are alloted a specified amount of money per pupil in their school. For example, in 1965 the district office authorized each school to spend $7.50 per pupil for supplies. All schools submitted requisitions to the central administrative office for final approval before purchase orders were written.

Table 9 reveals that in 1951 San Juan spent 32 percent less per student, in 1958 about the same as, and in 1965 about 34 percent more than Utah for instructional supplies. In 1964 San Juan spent $10.52 per pupil but dropped to $7.77 in 1965, even though the amount of money budgeted was the same for both years. This would indicate that there was still $1437 in the district budget for instructional supplies that was not spent.

Table 9. Instructional supply expenditures per pupil in average daily attendance for San Juan and Utah

Year	San Juan	Utah
1951	$ 2.86	$4.20
1952	4.60	4.48
1953	4.26	4.27
1954	4.42	4.07
1955	3.80	4.26
1956	3.72	4.33
1957	5.28	4.32
1958	5.29	5.31
1959	6.74	5.75
1960	9.24	6.25
1961	8.51	6.44
1962	8.53	7.01
1963	8.60	7.10
1964	10.52	7.83
1965	7.77	9.03
	Percent Increase Since 1951	
	168	115

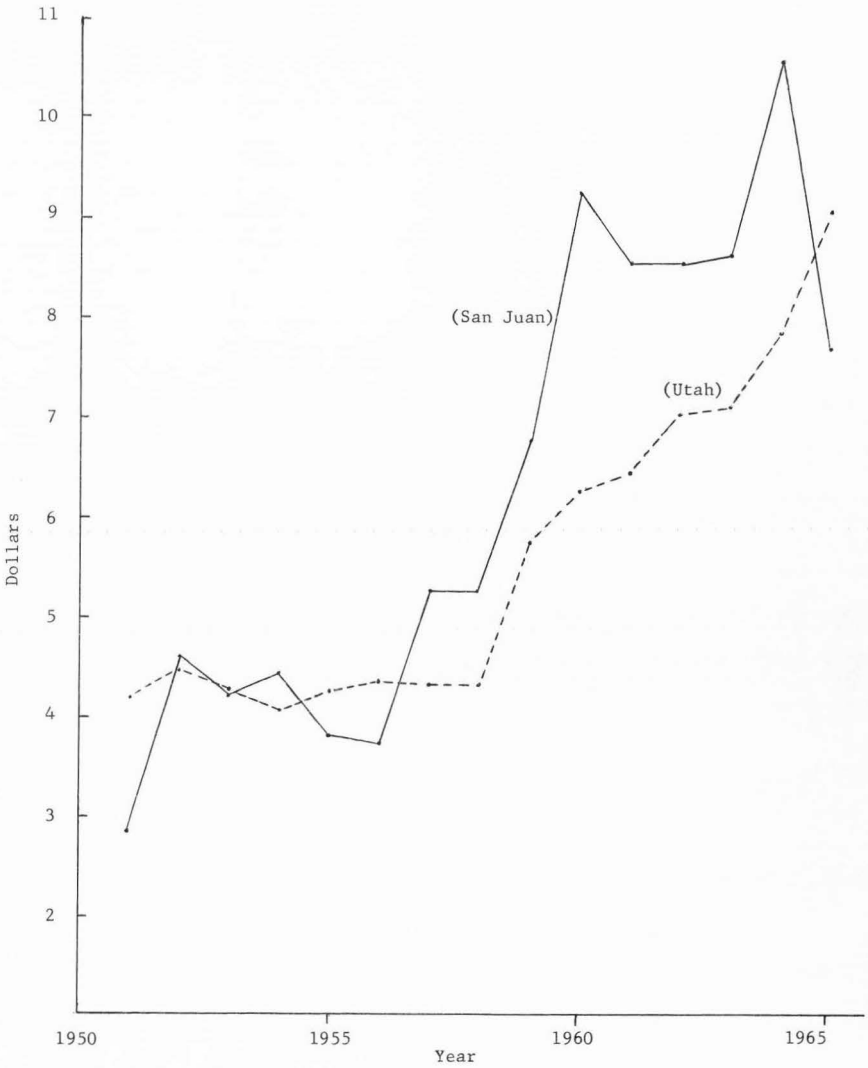


Figure 7. Instructional supplies expenditures per pupil in average daily attendance for San Juan and Utah, 1951-65.

Other instructional expenditures. Driver training and student tuition to neighboring school districts are the major items included under other instructional expenditures. Table 10 indicates that prior to 1958 San Juan was considerably below Utah's expenditure per pupil for other instructional expenditures. However, with the commencement of driver training in 1958, San Juan's expenditures increased from $.35 per pupil in 1957 to $1.39 in 1958 and each year continued to increase and by 1961 more than doubled Utah's expenditure in this category.

Auxiliary services

Included among auxiliary services are transportation, health service, food service, attendance service, and student body activities.

Table 11 shows that San Juan's expenditures for auxiliary services have gradually increased since 1951 with a substantial increase each year since 1959. Prior to 1958 Utah's expenditures for auxiliary services also included community services, summer schools, and adult education. In 1958 these services were shifted to another category. This naturally makes it difficult to make a logical comparison during these years. However, from 1958 the same expenditure trend as found in other areas seems to apply here also, this being that San Juan and Utah about equal in 1958 with each succeeding year San Juan's expenditures for auxiliary services increasing more rapidly than Utah's.

Table 10. Other instructional expenditures per pupil in average daily attendance for San Juan and Utah

Year	San Juan	Utah
1951	$ .18	$1.21
1952	.16	1.09
1953	.29	1.36
1954	.12	1.33
1955	.23	1.56
1956	.11	1.78
1957	.35	1.47
1958	1.39	2.04
1959	3.03	2.02
1960	2.98	2.33
1961	5.82	2.58
1962	5.51	2.84
1963	5.93	3.80
1964	5.39	3.26
1965	4.93	3.32
	Percent Increase Since 1951	
	2638	174

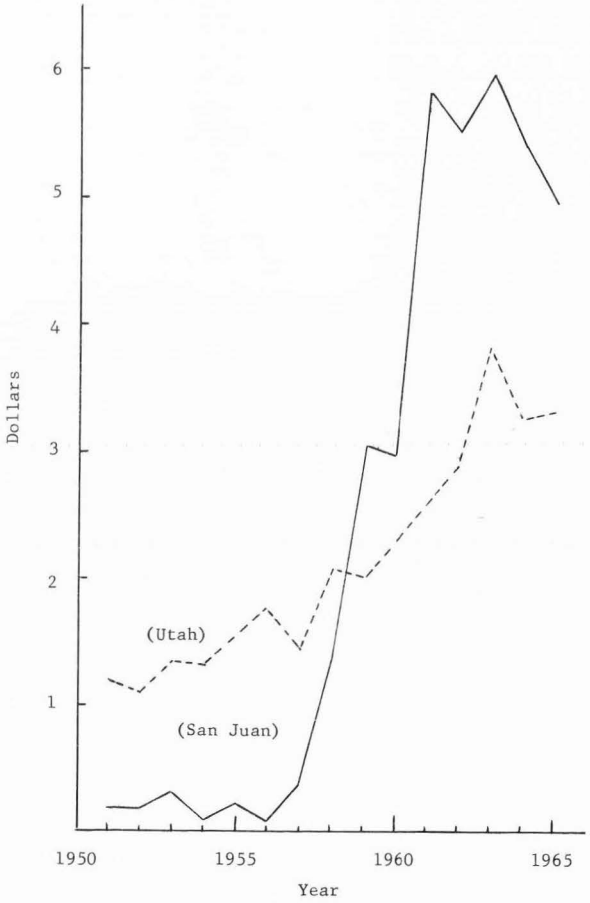


Figure 8. Expenditures for other instructional services per pupil in average daily attendance for San Juan and Utah, 1951-65.

Table 11. Auxiliary service expenditures per pupil in average daily attendance for San Juan and Utah

Year	San Juan	Utah
1951	$ 4.86	$24.97
1952	7.00	27.54
1953	6.67	28.02
1954	6.45	26.62
1955	10.82	30.52
1956	8.64	30.39
1957	11.09	34.07
1958	11.48	10.99
1959	18.85	10.98
1960	21.80	11.37
1961	21.36	10.92
1962	22.72	11.30
1963	27.12	11.70
1964	31.78	12.68
1965	33.30	11.49

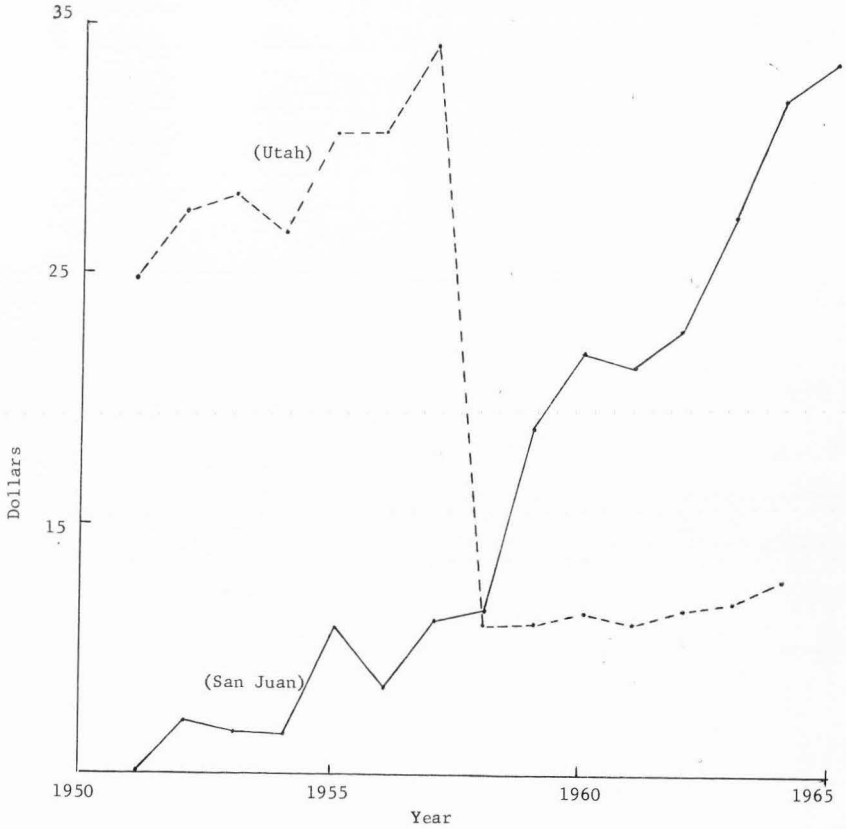


Figure 9. Auxillary services expenditures per pupil in average daily attendance for San Juan and Utah, 1951-65.

Operation of school plant

Operation of the school plant takes into consideration such items of expenditure as salaries of custodial help, custodial supplies, heating fuel, water, and electricity.

Table 12 shows that in 1951 San Juan spent $13.34 per child and $50.13 in 1965, or an increase of 376 percent as compared to an increase of 229 percent for Utah.

San Juan's substantial increase from 1959 can be attributed to the construction of new buildings throughout the district while the average daily attendance for the district remained about the same.

Maintenance of plant

Maintenance as a budgetary item includes salaries of maintenance employees, building and ground upkeep, replacement of equipment, and repair of furniture and school equipment.

San Juan, in the 15-year period from 1951 to 1965, increased maintenance costs by 843 percent or from $2.37 to $22.35 per pupil. For this same period, Utah increased from $9.83 to $17.21 per pupil, or 175 percent. Table 13 reveals that prior to 1958 San Juan's expenditure for maintenance of plant was well below Utah's and thereafter increased rapidly. This increase was due to the additional school buildings constructed throughout the district while at the same time the average daily attendance remained fairly constant.

Table 12. Operation of school plant expenditure per pupil in average daily attendance for San Juan and Utah

Year	San Juan	Utah
1951	$13.34	$15.03
1952	17.48	16.50
1953	20.00	17.22
1954	18.65	18.02
1955	17.04	19.27
1956	16.66	20.39
1957	18.41	21.67
1958	19.49	24.22
1959	22.88	24.76
1960	31.81	27.03
1961	34.41	27.74
1962	43.32	29.89
1963	44.66	31.03
1964	49.88	34.05
1965	50.13	34.42
	Percent Increase Since 1951	
	276	129

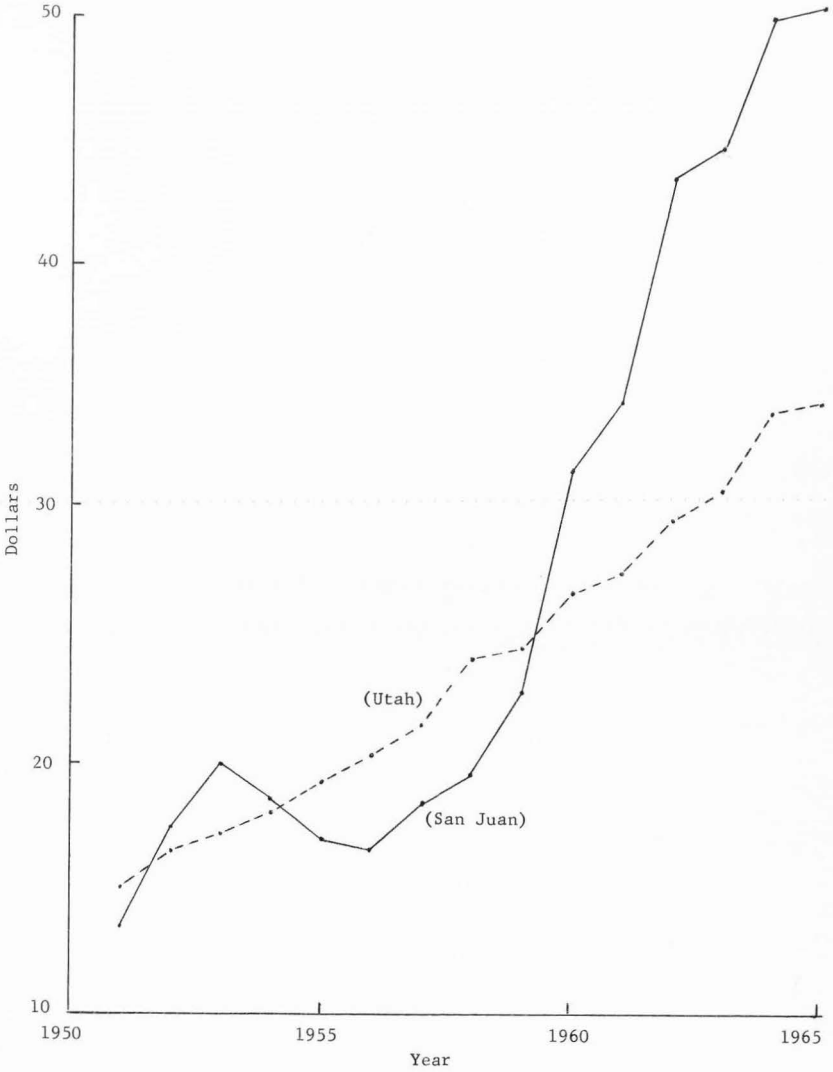


Figure 10. Expenditures for operation of school plant per pupil in average daily attendance for San Juan and Utah, 1951-65.

Table 13. Maintenance of plant expenditures per pupil in average daily attendance for San Juan and Utah

Year	San Juan	Utah
1951	$ 2.37	$ 9.83
1952	5.25	10.20
1953	5.75	10.57
1954	8.88	9.82
1955	7.84	10.60
1956	5.28	10.60
1957	7.19	9.60
1958	12.06	12.45
1959	18.38	14.33
1960	21.16	15.35
1961	30.19	16.37
1962	23.35	16.17
1963	30.30	16.34
1964	26.25	18.13
1965	22.35	17.21
	Percent Increase Since 1951	
	843	75

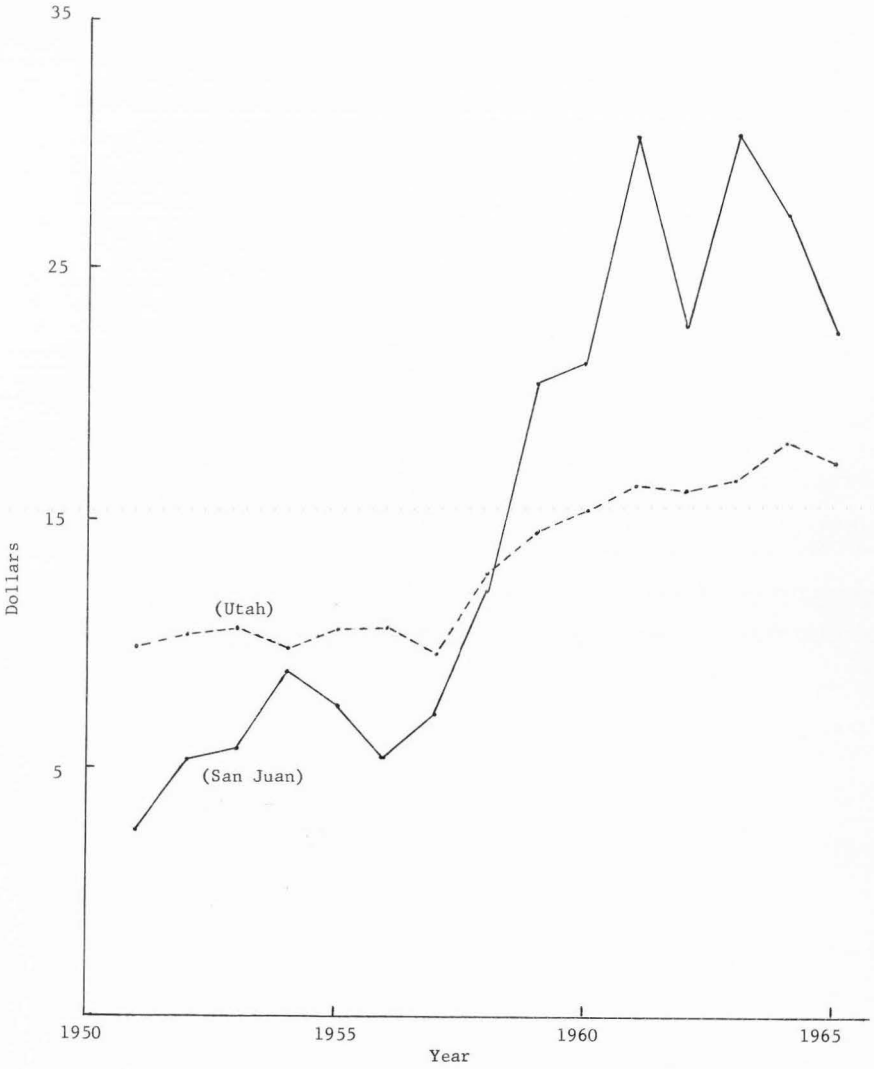


Figure 11. Maintenance of plant expenditures per pupil in average daily attendance for San Juan and Utah, 1951-65.

Fixed charges

This expenditure item includes insurance on employees, fire insurance, liability insurance of various types, fidelity bonds on employees handling sums of money, social security payments, and employee retirement funds.

Table 14 shows that San Juan's per pupil expenditure for fixed charges increased from $1.54 in 1951 to $43.05 in 1965, which was an increase of 2800 percent. In comparison, Utah's increased from $1.71 to $31.94, or 1868 percent.

Net current expenditures

Net current expenditures include all those expenditures generally considered in the maintenance and operation budget, namely: administration, instruction, other services, operation of plant, maintenance of plant, and fixed charges.

Net current expenditure per pupil is a good, but not perfect, measure of school quality. It may tell how much a district is spending, but not how wisely. It is interesting to note that in 1965 25 percent of the Nation's schools spent $467 or more per pupil for net current expenditures. The median among this 25 percent spent $537 as compared to $395 for all schools in the United States, (School Management, 1966, p. 140). In comparison, San Juan spent $495 per weighted pupil for net current expenditures, which would place the district in about the middle of the upper quartile of the schools in the nation.

Table 14. Fixed charges expenditures per pupil in average daily attendance for San Juan and Utah

Year	San Juan	Utah
1951	$ 1.54	$ 1.71
1952	1.35	2.06
1953	3.04	2.20
1954	3.86	5.15
1955	11.89	13.06
1956	15.98	14.17
1957	12.41	11.95
1958	22.31	16.61
1959	25.32	16.15
1960	29.72	19.82
1961	29.06	20.84
1962	35.97	24.55
1963	40.39	27.80
1964	40.99	31.18
1965	43.05	31.94
	Percent Increase Since 1951	
	2695	1768

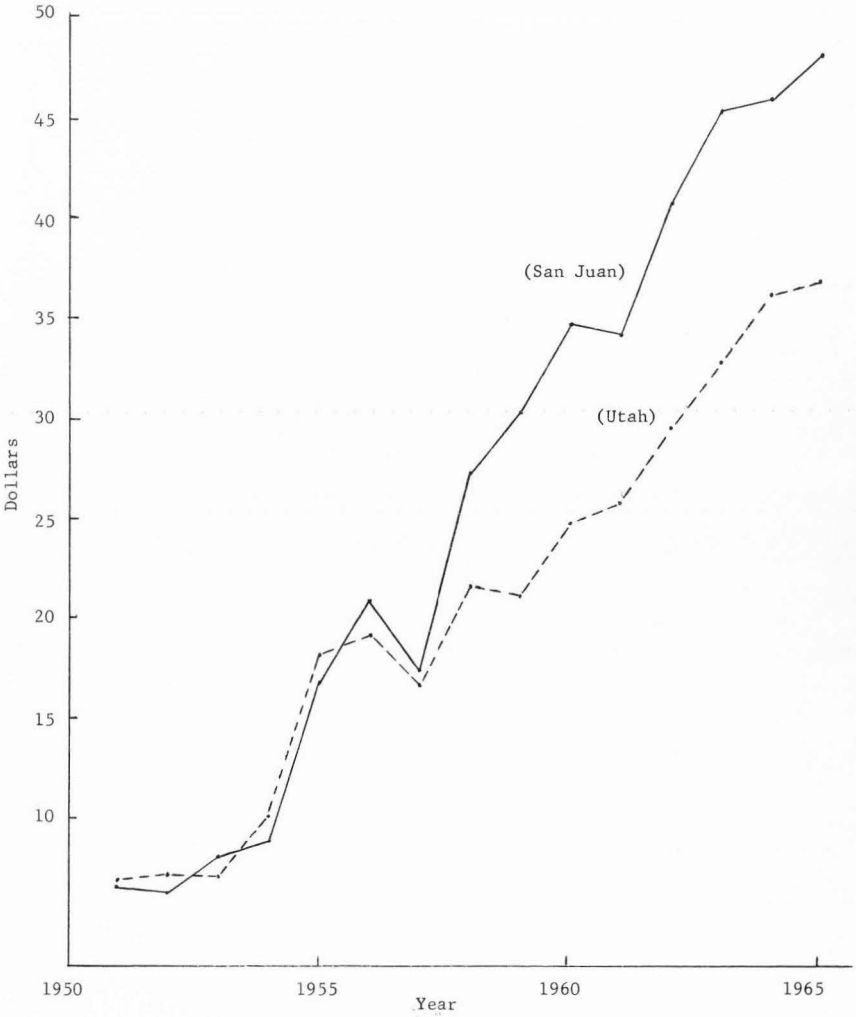


Figure 12. Fixed charges expenditures per pupil in average daily attendance for San Juan and Utah, 1951-65.

A close examination of Table 15 reveals that from the 40 districts in Utah, San Juan's per pupil expenditure ranked 40, 26, and 4 for the 1953, 1958, and 1965 school years and spent 33 percent less, 1.5 percent more, and 26 percent more than Utah during these same years.

Table 15 also shows that prior to 1958 San Juan was below Utah in net current expenditures per pupil, but thereafter increased steadily and by 1965 was spending $550 per pupil as compared to $405 for Utah.

Debt service

Debt service payments include the amount expended by the school district for payments of interest charges and reduction of principal on outstanding indebtedness.

Few districts can raise millions of dollars to build a new school in a single year. They could raise this amount over a period of years and therefore they must go in debt. Generally speaking, it is safe to say that with a few notable exceptions, the average school district can no longer "pay-as-it-goes" when building a new school. San Juan, however, is one of these few exceptions. With three exceptions, all building projects in San Juan School District have been constructed on a pay-as-you-go basis. The total indebtedness of the district at the end of 1965 was $491,000.

Table 15. Net current expenditures per pupil in average daily attendance for San Juan and Utah

Year	San Juan	Rank	Utah
1951	$163.51	39	$186.57
1952	173.08	39	201.93
1953	138.83	40	209.15
1954	207.81	33	216.42
1955	216.27	30	241.37
1956	213.64	40	251.68
1957	236.83	37	257.86
1958	282.22	26	277.92
1959	327.22	12	286.17
1960	432.36	4	309.88
1961	460.77	4	318.21
1962	481.53	5	336.39
1963	508.90	4	351.03
1964	540.66	5	395.99
1965	546.89	6	404.62
	Percent Increase Since 1951		
	234		116

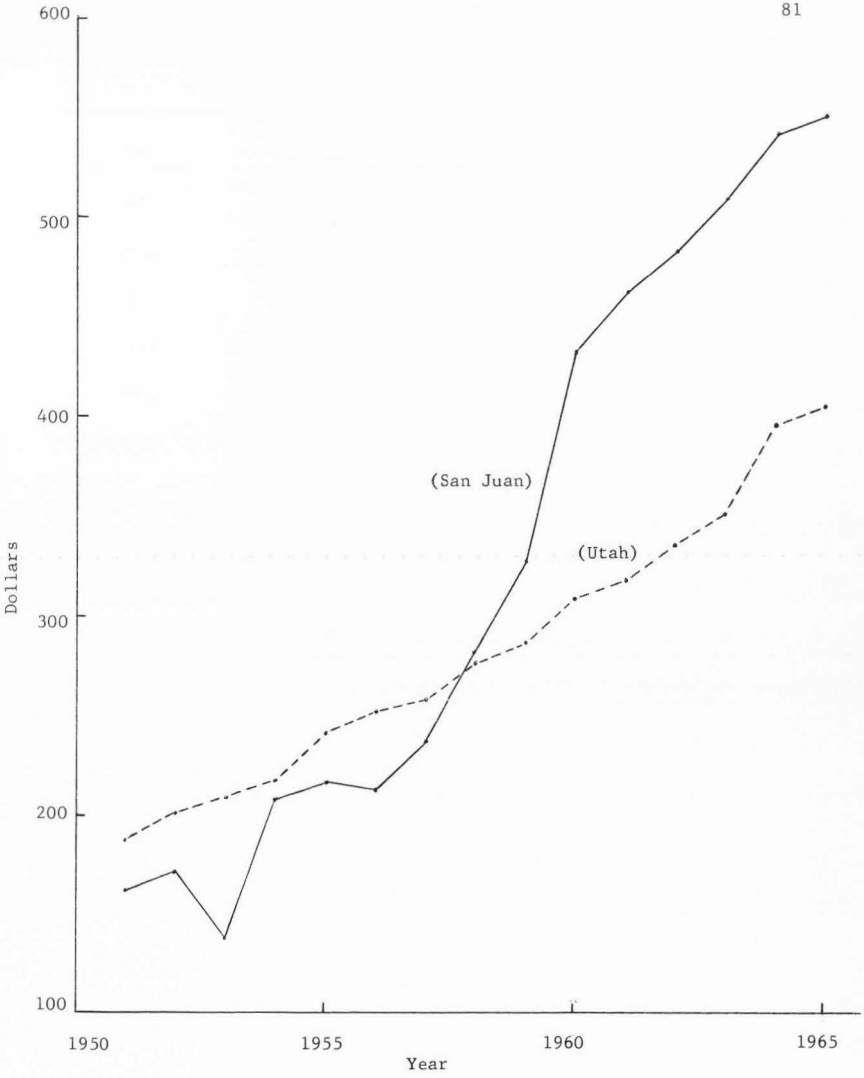


Figure 13. Net current expenditures per pupil in average daily attendance for San Juan and Utah, 1951-65.

Table 16. Debt service expenditures per pupil in average daily attendance for San Juan and Utah

Year	San Juan	Utah
1951	$ 8.76	$14.87
1952	49.97	21.67
1953	30.13	20.32
1954	27.94	21.25
1955	64.25	18.42
1956	6.29	18.79
1957	29.63	24.78
1958	34.09	32.06
1959	25.68	25.40
1960	65.16	28.64
1961	61.00	33.01
1962	67.34	40.68
1963	62.38	44.58
1964	55.89	46.40
1965	50.75	36.94
	Percent Increase Since 1951	
	479	148

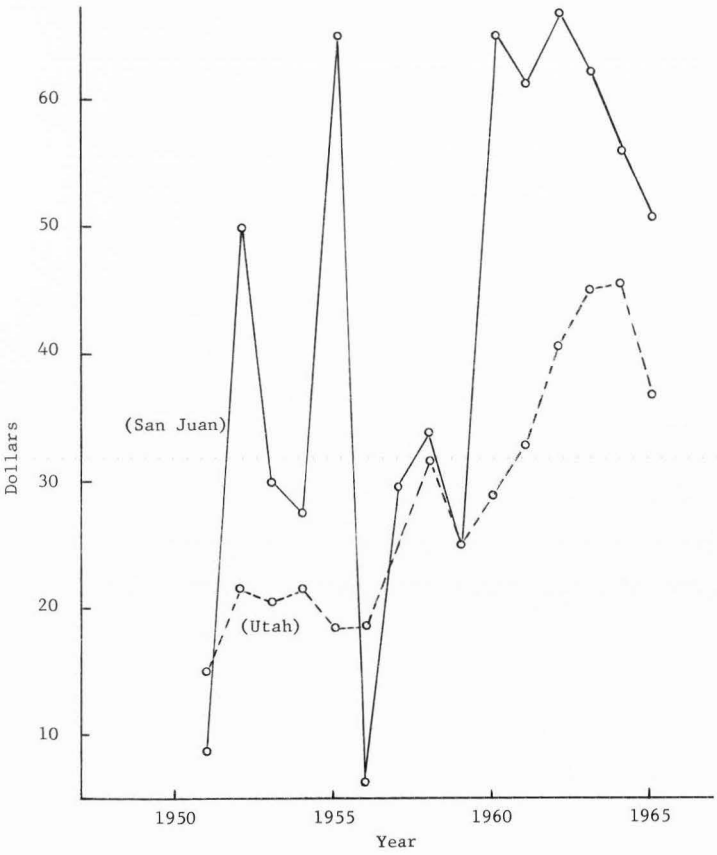


Figure 14. Debt service expenditures per pupil in average daily attendance for San Juan and Utah, 1951-65.

Capital outlay

Capital outlay includes expenditures made for payments for land sites, buildings, furniture and school equipment. School equipment includes items used for instructional purposes, such as shop equipment, science equipment, phonographs, radios, business machines, and movie projectors.

Expenditures for school buildings in San Juan has accounted for a large percentage of the total school expenditures. All 10 school buildings presently occupied have been constructed, remodeled, or had new additions since 1951. Table 17 gives a historical resume of the building program in San Juan. This table does not include $249,798 expended for site improvement nor $186,284 for building equipment.

Table 18 reveals that Utah's expenditure per pupil for capital outlay has increased gradually since 1951. However, capital outlay expenditures have been rather inconsistent from year to year. For example, a bond issue in 1951, for the construction of the Monticello High School, accounted for high expenditures during 1951-52. The next building project did not begin until 1956. As the valuation of the district began to increase, however, the vision of fulfilling other building needs became a reality. In 1956 San Juan launched a district building program that has ultimately provided every pupil within the district the opportunity to attend school in a new, comfortable, modern facility with ample equipment and materials capable of providing a healthy climate for learning opportunities.

Table 17. Construction of school facilities in San Juan since 1951

School	Description	Square feet	Cost	Date
Administration	District	3.312	$ 70,883.07	1958
Blanding	Elementary	25,226	393,312.97	1956
(Addition)		8,545	114,697.33	1964
Blanding	Teacher Housing	6,336	103,208.71	1958
Bluff	Elementary	1,484	21,263.20	1956
(Addition)		900	10,021.50	1958
(Addition)		2,868	51,269.50	1954
LaSal	Elementary	3,516	69,272.00	1956
(Addition)		2,196	102,817.00	1959
LaDal	Teacher Housing	2,680	30,759.29	1960
Mexican Hat	Elementary	4,240	42,563.42	1958
(Addition)		1,070	16,879.77	1960
Montezuma Creek	Elementary	6,284	100,861.82	1960
(Addition)			217,115.80	1965
Monticello	Elementary	42,415	516,474.24	1959
(Addition)		6,820	99,586.06	1964
Monticello High	Secondary	25,493	315,970.00	1951
(Addition)		6,000	106,848.00	1957
(Addition)		11,836	257,180.00	1961
(Addition)		35,168	874.414.00	1963
Monticello	Teacher Housing	6,336	106,995.43	1958
Park Terrace	Elementary	25,044	420,512.01	1960
San Juan High	Secondary	38,516	794,260.98	1961
(Addition)		14,976	341,336.52	1964
	Total	281,261	$5,178,502.62	

Table 18. Capital outlay expenditures per pupil in average daily attendance for San Juan and Utah

Year	San Juan	Utah
1951	$238.30	$ 61.45
1952	162.62	61.51
1953	23.51	71.09
1954	4.22	83.38
1955	22.68	113.09
1956	270.70	125.19
1957	218.06	134.65
1958	300.89	123.23
1959	383.13	130.30
1960	527.00	116.35
1961	521.27	122.89
1962	377.28	122.42
1963	269.81	128.96
1964	172.66	131.64
1965	217.87	133.36

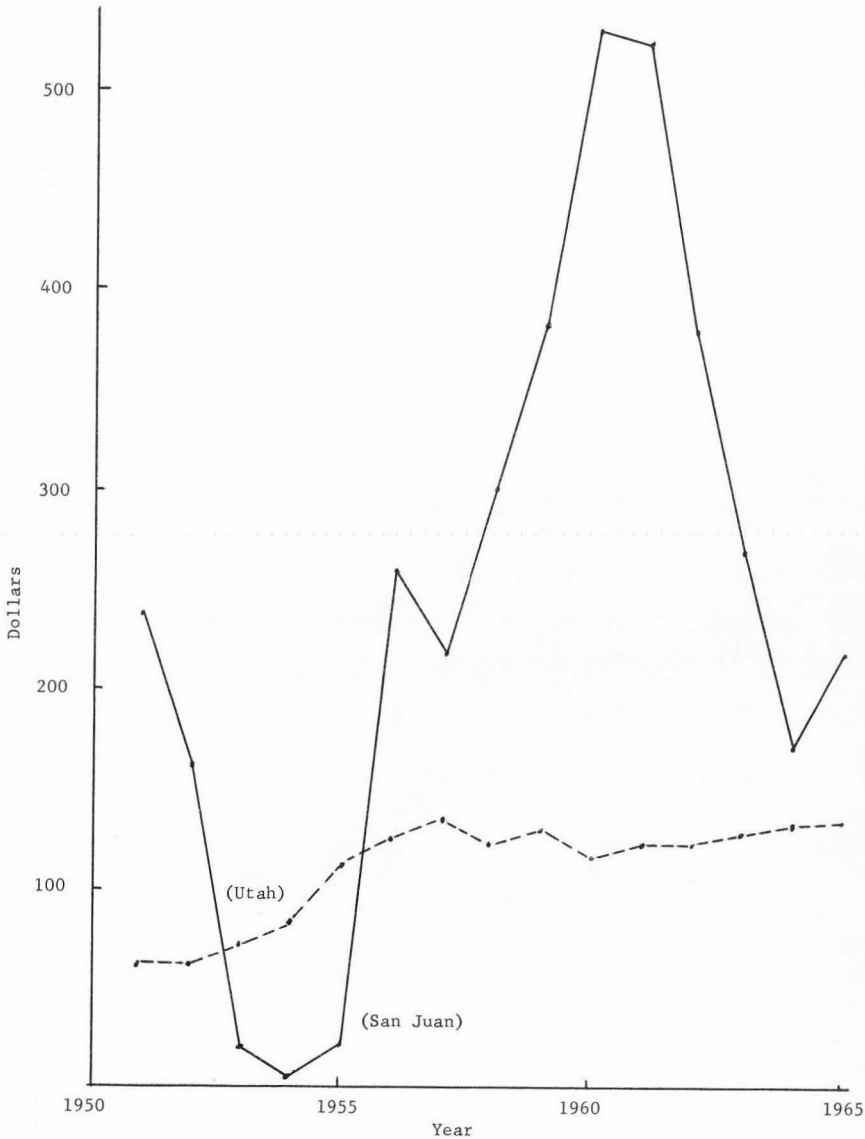


Figure 15. Capital outlay expenditures per pupil in average daily attendance for San Juan and Utah, 1951-65.

Total school expenditures

Total school expenditures include all money expended in the school budget. Included are: Administration, instruction, auxiliary services, operation of plant, maintenance of plant, fixed charges, capital outlay, and debt service.

Table 19 shows the trend for total school expenditures per pupil for San Juan and Utah since 1951. In 1953 San Juan spent $242.14 per pupil and $851.70 in 1965, or an increase of 338 percent. Utah's expenditures for the same period of time were $302.60 and $595.00, an increase of 261 percent.

Except for one year, Utah's total school expenditures per pupil have increased steadily, whereas San Juan's expenditures have been eratic. To illustrate, every time a new building was constructed in San Juan the total expenditures would rise sharply. This being especially true because of the consistent number of pupils in the district from year to year. It is interesting to note that during some years, San Juan spent approximately twice as much per pupil as did Utah.

Teacher Personnel

The San Juan School District, located in the extreme southeast area of Utah, is somewhat isolated because of its geography and distance from the urban communities along the "Wasatch Front," Salt Lake City being the principal city. Therefore, San Juan, as perhaps in other similar school districts, has experienced frustration and concern over teacher

Table 19. Total school expenditures per pupil in average daily attendance for San Juan and Utah

Year	San Juan	Utah
1951	$424.58	$266.38
1952	394.02	287.68
1953	242.14	302.60
1954	240.94	321.70
1955	303.20	372.89
1956	498.91	402.57
1957	484.52	376.42
1958	619.87	437.17
1959	740.43	445.17
1960	1028.15	458.44
1961	1047.18	477.71
1962	930.23	503.49
1963	962.51	528.10
1964	772.62	579.17
1965	851.70	595.15
Percent Increase From 1951-1965		
	101	73

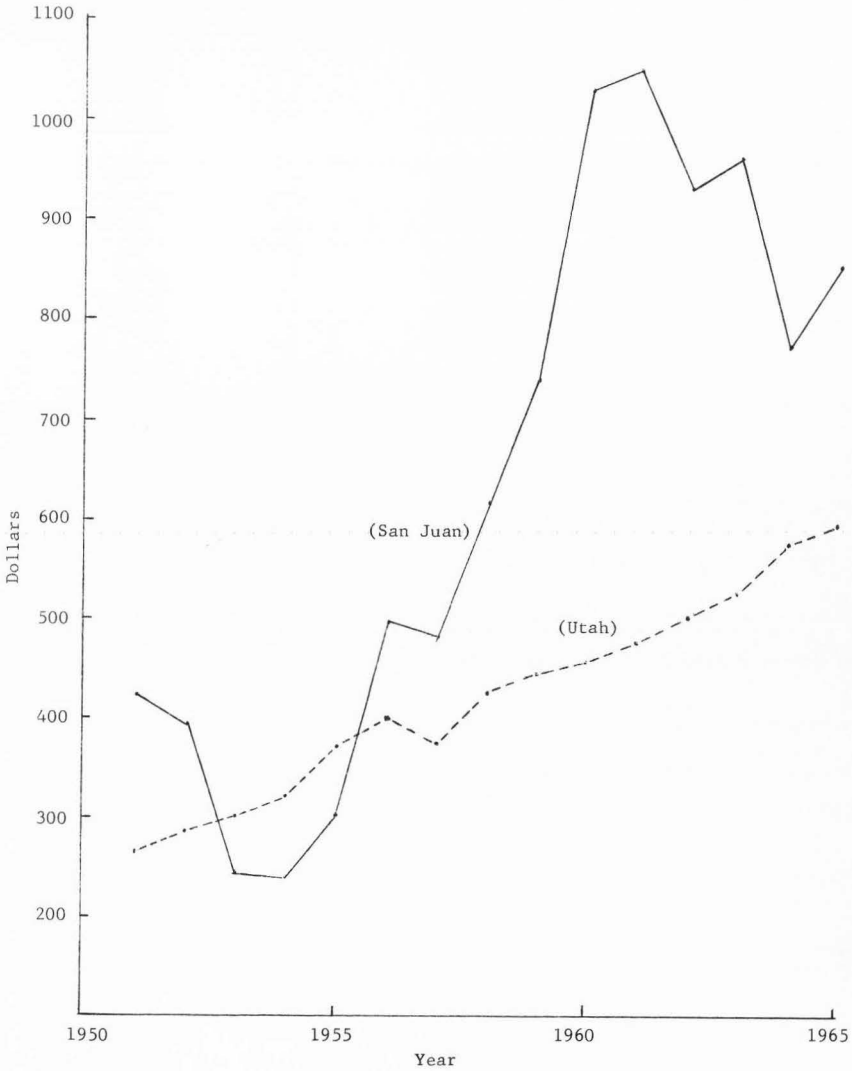


Figure 16. Total school expenditures per pupil in average attendance for San Juan and Utah, 1951-65.

certification, turnover, and preparation of teachers.

Teacher certification

The most earnest claims to professionalism are undermined if anyone can be assigned to teach almost anything; if an English major who has six college credits in math can become a math teacher overnight, or if a high school music teacher can take over a third grade without any preparation in the teaching of reading.

Our claims to professional status are threatened if we cannot offer the public reasonable guarantee that their children's teachers are qualified for their assignments. Properly trained teachers and upgrading the education of teachers before and after they begin practice, are but two links in the chain of action needed to improve the quality of education of our schools.

The certification of teachers is a vital concern of the State. It is a fundamental importance because many people believe that the teacher is the single factor, above all others, that is responsible for the difference between quality and mediocre education. A district may construct new buildings, provide adequate teaching supplies and materials, maintain a small teacher-pupil ratio, use all the new media, but the competency of the teacher determines the difference between success and failure in the classroom.

During most of the 1950's obtaining and retaining certified teachers in San Juan presented a difficult challenge. Several factors contributed to San Juan's difficulty, but the teacher shortage, geographical

location, and lack of adequate finances were more pronounced. Prior to 1959 it was almost financially impossible for the district to offer a salary schedule that was competitive with other Utah districts. However, as Table 22 shows, the Board took positive action relevant to salaries and made a concerted effort to obtain and retain qualified teachers.

All of the achievement tests were administered in the Monticello Schools and whenever feasible, comparisons with San Juan, Utah and Monticello have been made. Table 20 shows the certification trend in San Juan, Utah, and Monticello for the past 15 years. Monticello's lowest certification occured in 1956 when only 36 percent of its professional staff were properly certified, as compared to Utah's 83.5 percent. In 1963 all of Monticello's professional staff were certificated as compared to 95.2 percent for Utah.

Degreed teachers

San Juan has made improvement in the area of employing teachers that possess a degree from an accredited University or College. As late as 1959 the district employed teachers that had less than one semester of college credit. However, with increased pressure from the State Board of Education and their adoption of Regulations for Upgrading of Teachers Employed on Letters of Authorization, San Juan's percent of degreed teachers began to rise consistently. The Monticello schools attained another sought after goal in 1965 when all of their teachers were fully degreed.

Table 20. Percentage of professional staff in San Juan, Utah, and Monticello who served with proper certification during the years 1951-1965

Year	San Juan	Utah	Monticello
1951	48.8	84.7	44.1
1952	54.3	86.5	44.4
1953	39.5	86.1	37.3
1954	47.7	83.5	37.8
1955	46.0	82.8	57.0
1956	41.0	83.5	36.6
1957	43.9	83.9	52.2
1958	36.7	86.0	43.8
1959	45.1	89.8	52.2
1960	59.1	91.6	60.7
1961	75.5	93.8	76.5
1962	91.5	95.0	84.5
1963	97.9	95.2	100.00
1964	87.1	95.0	95.8
1965	93.2	96.1	95.0

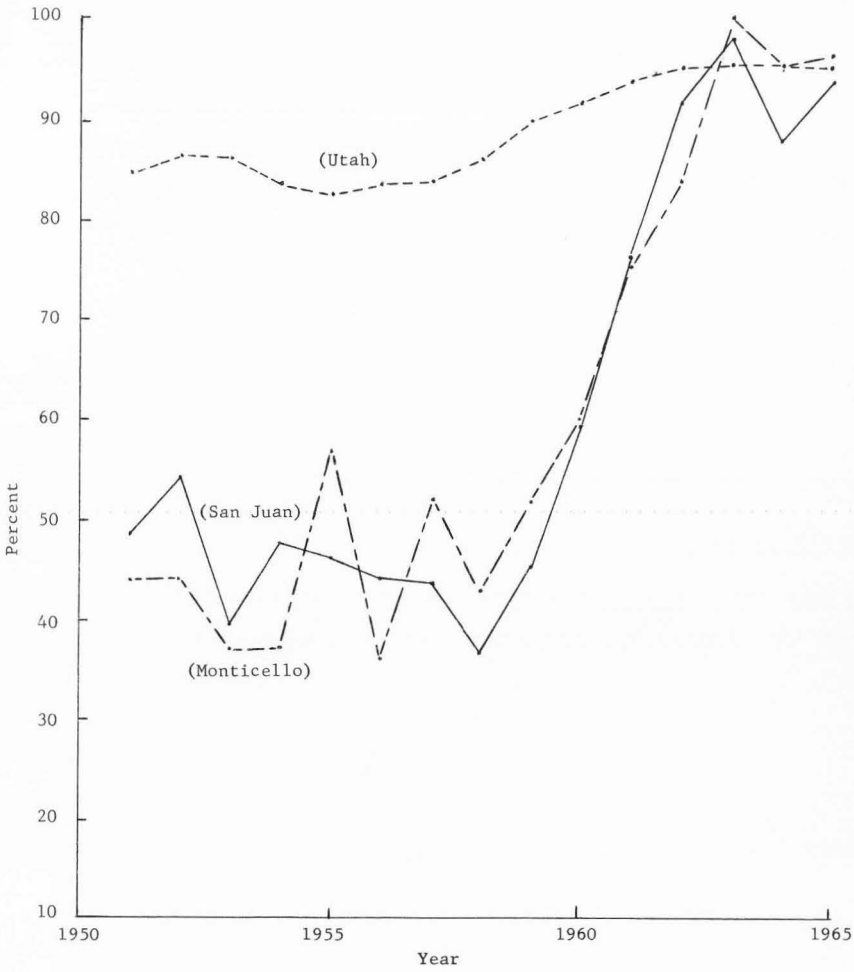


Figure 17. Percentage of professional staff in San Juan, Utah, and Monticello who served with proper certification during the years 1951-65.

Table 21 shows the yearly percent of degreed teachers that taught in the Monticello schools for the past 15 years.

Table 21. Percent of degreed teachers serving in the Monticello schools from 1951 to 1965

Year	Elementary	Secondary	Combined
1951	38	78	58
1952	57	89	75
1953	42	66	56
1954	42	66	56
1955	60	91	81
1956	38	76	60
1957	41	85	64
1958	64	71	68
1959	66	88	77
1960	79	88	83
1961	89	90	89
1962	89	95	92
1963	95	100	98
1964	95	100	97
1965	100	100	100

Teacher turnover

The Board of Education's concern over teacher turnover was expressed in the following motion:

> A motion was made by member Stevens, seconded by member Barton and carried that the Board construct 6-3 bedroom homes in Monticello and 6-3 bedrooms at Blanding for teacher housing. (Minute book, 1957, p. 415)

The Board anticipated that the construction of this housing project would alleviate the housing shortage and provide satisfactory housing for professional personnel.

In the fall of 1958 the following letter was sent to all persons whose names and addresses could be acquired from the principals, teachers, and superintendent. This letter was one phase of a cooperative study conducted by the State Department of Public Instruction and the Brigham Young University.

> The Board of Education in San Juan District has authorized a district wide school survey. One of the definite concerns of the Board of Education was the question of obtaining and retaining properly certificated teachers.
>
> We are contacting teachers who were giving good service in San Juan but who have accepted positions in other districts during the past one to five years. We the survey committee, are soliciting your help in any constructive way that you suggest. We will appreciate and try to use wisely any data or information you can furnish to the committee. We will appreciate this service and your returning your communications to the undersigned at your earliest convenience.

Teacher's responses to this survey were numerous, but comments focused on salary schedules, housing, distance from larger centers, cost of living, family considerations, apathy toward the schools, lack of social opportunities, and wanted to build a home elsewhere.

After analyzing this survey, the Board approved a new salary schedule which provided a beginning salary that was $350 higher than the average beginning salary for Utah and $400 higher than the maximum.

The above two motions were indicative of the Board's desire to counteract some of the obstacles in retaining teachers. Table 23 shows that since 1959 San Juan's salary schedule has provided a higher minimum and maximum salary than the average for Utah.

Table 22 shows the teacher turnover trend for the Monticello schools since 1951. The combined highest percent turnover occured in 1957 when 65 percent of the teachers failed to return to the classroom. The combined lowest percent turnover occured in 1961 with only 15 percent leaving the classroom. It is interesting to note that in 1954 the high school's turnover was 78 percent and the elementary's was zero. The highest percent turnover for the elementary was 53 percent in 1959.

Salary schedules

Some critics say that most of the extra money spent by high-expenditure districts is wasted on frills, and that good teaching comes from the heart and not the dollar. Others feel that dedicated teachers make the real difference between a quality education and one that is "run-of-the mill."

In the cost-quality study conducted for the Kentucky State Board of Education it was concluded that salaries paid to teachers was one of eight factors retained as quality indicators in a school system, (School

Table 22. Percent of teacher turnover for the Monticello schools since 1951

Year	Elementary	Secondary	Combined
1951	50	44	42
1952	29	44	38
1953	29	56	44
1954	0	78	44
1955	10	45	29
1956	31	46	38
1957	46	69	65
1958	43	29	35
1959	53	27	40
1960	26	32	29
1961	16	15	15
1962	22	15	18
1963	10	20	15
1964	21	20	21
1965	12	21	16

Management, 1965, pp. 79-83).

Few items in San Juan's school budget have received as much concern and attention as salaries paid to professional employees. As the

wealth of the district increased the Board of Education annually adopted a salary schedule that was enticing and competitive with other Utah districts. For example, the following motion implied a willingness of the Board to provide salaries to obtain and retain competent teachers.

> Mr. W. N. Ball, Asst. State Supt. and LeRue Winget director of secondary education met with the Board at the request of Supt. Black to discuss the advisability of conducting a survey to determine building need, financial structure, school organization, transportation, and teacher salaries in the district. (Minute Book, 1958, p. 423)

> A motion was made by Crowley, seconded by Stevens and carried that the Salary Schedule prepared by the Salary Schedule Committee and presented by Supt. Black be approved as submitted, providing for a beginning salary of $4,500 and maximum salary after 19 years service of $6,900 for certified degreed teachers. Additional compensation over and above the base pay may be granted for special training, ability, and meritorious service. No teacher shall qualify for this regulation except as recommended by the superintendent and approved by the Board. (Minute Book, 1959, p. 437)

Table 23 compares San Juan and Utah's average minimum and maximum salary for teachers with a bachelor's degree. It is interesting to note that in 1951 San Juan's beginning salary was equal to Utah's, $200 higher in 1958, $900 higher in 1961, and $563 higher in 1965.

San Juan's average maximum salary differential was $200 less than Utah's in 1951, even in 1958, $987 higher in 1961, and $846 higher in 1965.

Table 24 compares San Juan and Utah's average minimum and maximum salary for teachers with master's degrees. This trend is similar to the bachelor's degree schedule. Again, it is interesting to note that

Table 23. San Juan and Utah's average minimum and maximum salary for teachers with a bachelor's degree

Year	Minimum		Maximum	
	San Juan	Utah	San Juan	Utah
1951	$2400	$2400	$3300	$3500
1952	2600	2688	3500	3788
1953	2800	2748	3700	3900
1954	2900	2900	3800	4020
1955	3200	3100	4200	4200
1956	3200	3122	4200	4230
1957	3400	3200	4500	4400
1958	3800	3600	5200	5200
1959	4000	3660	5700	5300
1960	4500	3850	6000	5450
1961	4800	3900	6500	5513
1962	4800	4000	6500	5762
1963	4800	4105	6800	5985
1964	5100	4560	7100	6695
1965	5300	4584	7500	6754

in 1951 San Juan's minimum salary was $50 less than Utah's, $200 higher in 1958, $898 higher in 1961, and $477 higher in 1965.

The average maximum salary differential in 1951 placed San Juan

Table 24. San Juan and Utah's average minimum and maximum salary for teachers with a master's degree

Year	Minimum		Maximum	
	San Juan	Utah	San Juan	Utah
1951	$2600	$2650	$3500	$3850
1952	2800	2968	3700	4168
1953	3000	2900	3900	4060
1954	3100	3050	4000	4200
1955	3400	3275	4400	4400
1956	3400	3275	4400	4400
1957	3600	3400	4700	4600
1958	4000	3800	5400	5400
1959	4200	3900	5900	5513
1960	4720	4100	6900	5700
1961	5000	4102	6900	5700
1962	5000	4225	6900	6100
1963	5000	4329	7200	6226
1964	5300	4843	7500	6971
1965	5500	4840	8200	7065

$350 lower than Utah, equal to in 1958, $1200 higher in 1961, and $868 higher in 1965. However, in comparing these figures it should be recalled that Utah's average salary represents all 40 Utah districts,

which means that inter-district salary fluxuations could vary greatly.

Lifetime earnings is another index frequently used to compare teaching salaries. Of course, no salary schedule will remain the same during a 40-year period. Table 25 shows a comparison of possible lifetime earnings of a beginning teacher for three different years. These lifetime earnings are based upon the potential salary a teacher might earn if the specific salary schedule were to remain in use for 40 years.

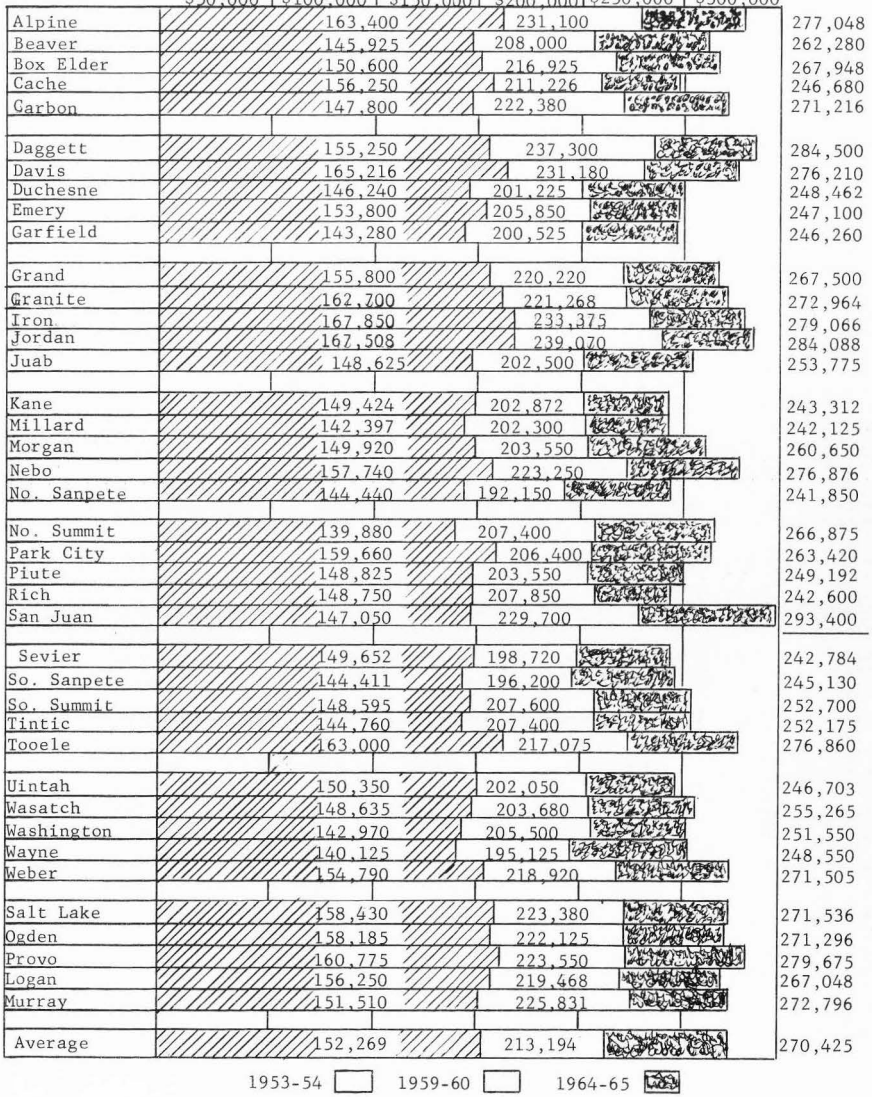
In 1954 San Juan's lifetime earnings was $5219 less than the state average, $16,506 higher in 1960, and $22,975 higher in 1965. On a ranking basis with the 40 Utah districts, San Juan ranks 30, 6, and 1 respectively for the three years.

However, it should be mentioned that during the past several years teachers have had to fight hard for salaries to keep ahead of inflation. The estimated average salary for classroom teachers in the United States during 1966 was $6341. This was a 4 percent increase over a year ago and gave teachers a slight burst over the effects of inflation, with $171 of this raise going to fight inflation and $75 to improve their living standard. Since the 1957-59 period teachers are actually ahead by $182. To illustrate, the average teacher in the median district has $182 more purchasing power today than six years ago, (School Management, 1966, p. 127).

Teacher-pupil ratio

The total work load to be assigned a teacher is a very important factor, not only to teachers, but to pupils, taxpayers,

Table 25. Comparison of possible lifetime earnings (40 years) of a beginning teacher for 1953-54, 1959-60, and 1964-65



and the Board of Education as well. The teacher-pupil ratio is often considered to be one of the many indicators of a quality system. Class size may influence the method of instruction used by the teacher and determines the amount of teacher time available for meeting individual student needs.

Table 26 summarizes the teacher-pupil ratio for Utah, the San Juan School District, and the schools in Monticello. Utah and Monticello's elementary teacher-pupil ratio is higher than San Juan's for each of the 15 years. The number of pupils in attendance at each school is the contributing factor responsible for Monticello's teacher-pupil load being higher than San Juan. For example, the Monticello elementary school is and has been considered one of the larger schools in the district. Currently five of the eight elementary schools in San Juan are designated by the State as special schools, housing from 6 to 125 students. In the compilation of San Juan's teacher-pupil ratio, it is mandatory to include all of these special schools. However, in doing so, this reduced the teacher-pupil ratio for the larger schools.

Monticello's highest elementary ratio of 38.10 was recorded in 1952 and from 1959 was less than 28.00, reaching a low of 25.07 in 1965. Monticello's secondary teacher-pupil ratio has been lower than Utah's for each of the 15 years, reaching a high of 24.20 in 1955 and a low of 17.13 in 1961.

Table 26. Summarization of the teacher-pupil ratio for Utah, San Juan, and the schools in Monticello

		Elementary			Secondary			Combined		
		No. tchrs.	A.D.A.	Tchr.-pupil ratio	No. tchrs.	A.D.A.	Tchr.-pupil ratio	No. tchrs.	A.D.A.	Tchr.-pupil ratio
1951-52	Utah	2,826.09	93,469.68	33.07	2,272.13	59,176.94	26.04	5,098.22	152,646.62	29.94
	San Juan	17.00	507.65	29.86	15.00	317.97	21.20	32.00	825.62	25.80
	Monticello	6.00	229.00	38.10	8.00	151.00	18.90	14.00	380.00	27.14
1952-53	Utah	2,964.33	98,110.40	33.09	2,353,00	60,331.14	25.64	5,317.33	158,441.54	29.80
	San Juan	20.00	525.59	26.28	16.00	312.46	19.53	36.00	838.05	23.28
	Monticello	7.00	218.08	31.10	7.50	151.77	20.20	14.50	369.85	25.50
1953-54	Utah	3,118.34	104,075.89	33.38	2,411.03	62,718.39	26.01	5,529.37	166,794.28	30.17
	San Juan	21.00	558.38	26.59	16.00	335.70	20.98	37.00	894.07	24.16
	Monticello	7.00	225.71	32.20	8.00	167.24	20.90	15.00	392.95	26.20
1954-55	Utah	3,408.86	109,198.00	32.03	2,507.98	65,493.00	26.11	5,916.84	174,991.00	29.58
	San Juan	27.49	670.00	24.37	18.47	401.00	21.71	45.96	1,074.00	23.37
	Monticello	8.00	291.00	36.40	9.00	217.92	24.20	17.00	509.14	29.94
1955-56	Utah	3,606.08	112,000.00	31.06	2,645,50	69,269.00	26.18	6,251.58	181,269.00	29.00
	San Juan	33.33	787.00	23.61	21.17	423.00	19.98	54.50	1,210.00	22.20
	Monticello	12.00	338.95	28.20	12.00	237.24	19.70	24.00	576.19	24.00
1956-57	Utah	3,716.77	115,979.00	31.20	2,797,79	72,775.00	26.03	6,512.56	188,754.00	28.98
	San Juan	38.91	940.00	24.16	22.17	484.00	21.83	61.08	1,424.00	23.31
	Monticello	13.00	372.65	28.60	12.50	271.62	21.70	25.50	644.27	25.26
1957-58	Utah	3,983.10	120,537.00	30.26	3,064.26	74,551.00	24.33	7,047.36	195,088.00	27.68
	San Juan	49.73	1,086.00	21.82	23.83	537.00	22.54	73.56	1,622.00	22.05
	Monticello	13.00	366.62	28.20	12.00	282.74	23.50	25.00	649.36	25.97
1958-59	Utah	4,168.93	127,722.00	30.64	3,258.12	78,358.00	24.05	7,427.05	206,080.00	27.75
	San Juan	52.80	1,254.00	23.75	27.20	576.00	21.18	80.00	1,830.00	22.88
	Monticello	13.00	404.67	31.10	13.00	290.51	22.30	26.00	295.18	26.74
1959-60	Utah	4,405.17	131,081.00	29.76	3,544.12	85,236.00	24.05	7,949.29	216,317.00	27.21
	San Juan	50.41	1,073.00	21.29	30.33	569.00	18.76	80.74	1,642.00	20.33
	Monticello	14.00	370.25	26.40	15.50	277.89	17.92	29.50	648.14	21.97
1960-61	Utah	4,612.37	135,680.00	29.42	3,812.48	90,211.00	23.66	8,424.85	225,891.00	26.81
	San Juan	54.23	1,207.00	22.26	32.33	563.00	17.41	86.56	1,732.00	20.29
	Monticello	16.00	445.36	27.80	16.50	282.77	17.13	32.50	728.13	22.40
1961-62	Utah	4,823.53	140,542.00	29.14	4,041.61	94,468.00	23.37	8,865.14	235,010.00	26.51
	San Juan	54.05	1,143.00	21.15	31.31	589.00	18.81	85.36	1,732.00	20.29
	Monticello	15.00	401.43	26.70	16.50	289.78	17.56	31.50	691.21	21.94

Table 26. (Cont'd.)

		Elementary			Secondary			Combined		
		No. tchrs.	A.D.A.	Tchr.-pupil ratio	No. tchrs.	A.D.A.	Tchr.-pupil ratio	No. tchrs.	A.D.A.	Tchr.-pupil ratio
1962-63	Utah	5,021.41	145,753.00	29.02	4,256.92	99,520.00	23.38	9,278.33	245,273.00	26.44
	San Juan	53.33	1,131.00	21.21	30.95	611,00	19.74	84.28	1,742.00	20.67
	Monticello	16.00	407.12	25.40	16.00	288.09	18.00	32.00	695.21	21.73
1963-64	Utah	5,372.04	150,515.00	28.02	4,519.27	105,029.00	23.24	9,891.31	255,544.00	25.84
	San Juan	54.18	1,128.00	20.82	31.81	636.00	19.99	85.99	1,764.00	20.51
	Monticello	15.00	396.21	26.40	16.00	295.62	18.47	31.00	691.83	22.32
1964-65	Utah	5,636.52	154,363.00	27.39	4,800.17	109,983.00	22.91	10,436.69	264,346.00	25.33
	San Juan	58.20	1,200.00	20.62	32.31	673.00	20.83	90.51	1,873.00	20.69
	Monticello	15.00	376.10	25.07	16.00	306.67	20.40	31.00	682.70	22.02

Source: Utah State Board of Education, March 31, 1966

Student Achievement Results

Analysis of covariance of the achievement scores on the California Achievement Test produced significant F values which rejected all three of the null hypotheses and confirmed the research hypotheses that the amount of expenditure per pupil did influence the learning opportunities of students in the San Juan School District, as measured by the achievement gains on the California Achievement Test.

The F values on Table 27 refer to hypothesis one and two and are significant at the .01 level of confidence. Thus we are quite sure with a probability of .99 that a difference in the achievement means resulted from the different expenditure treatments to which the three groups of students were exposed in this study.

The F values in Table 28 refer to the third hypothesis and were obtained by individual analysis of covariance for each grade. The treatments being expenditure years in a completely randomized design with unequal subclass numbers. Thirteen of the F values in Table 28 are significant at the .01 level, one at the .05 level, and six are not significant. It should be noted that none of the F values for the eighth grade are not significant. Ordinarily, this would mean that Duncan's Multiple Range Test would not be applied to this grade, but in order to furnish the reader with similar data as the other four grades, Duncan's Test was employed.

Findings of the total achievement scores among three expenditure years and among three groups of students

For individual comparisons between the adjusted treatment means,

Table 27. An analysis of covariance summary in the areas of reading, arithmetic, language arts, and total achievement scores among three expenditure years and three groups of students

Achievement area	Source of variation	df	Sum of squares	Mean square	F	Significance
Reading	Between means	2	.86	17.93	20.45	.01
	Within means	715	627.06	.88		
Arithmetic	Between means	2	45.58	22.79	20.78	.01
	Within means	175	784.01	1.10		
Language	Between means	2	17.90	8.95	11.10	.01
	Within means	175	576.56	.81		
TOTAL	Between means	2	31.59	15.80	29.14	.01
	Within means	175	387.54	.54		

Duncan's Multiple Range Test was employed. Results of this test are shown in Tables 29 through 34. The standard error of the difference between two means was calculated from the mean square error for a 3 x 5 factorial design with unequal subclass members.

Statistical evidence from Table 29 indicates that:

(a) When comparing the total achievement gains between the low and high expenditure school years, significant differences were found. Interpreted, this means that students who attended the schools in San Juan during the high expenditure school year, 1965, did attain significantly higher achievement scores than the students who attended the same schools during the low expenditure school year, or 12 years previous.

Table 28. An analysis of covariance summary in the areas of reading, arithmetic, language arts, and total achievement scores among three expenditure years and within each grade level

Grade	Achievement area	Source of variation	df	Mean square	F	Signi-ficance
3	Reading	Between treatments	2	4.26	11.92	.01
		Error	174	.36		
3	Arithmetic	Between treatments	2	9.76	54.59	.01
		Error	174	.18		
3	Language	Between treatments	2	3.01	8.63	.01
		Error	174	.35		
3	Total	Between treatments	2	6.13	37.19	.01
		Error	174	.16		
5	Reading	Between treatments	2	8.50	12.39	.01
		Error	139	.69		
5	Arithmetic	Between treatments	2	3.33	17.64	.01
		Error	139	.19		
5	Language	Between treatments	2	3.40	6.13	.01
		Error	139	.55		
5	Total	Between treatments	2	3.60	18.39	.01
		Error	139	.20		
6	Reading	Between treatments	2	1.15	2.07	NS
		Error	142	.73		
6	Arithmetic	Between treatments	2	15.70	48.93	.01
		Error	142	.32		
6	Language	Between treatments	2	.63	1.41	NS
		Error	142	.44		
6	Total	Between treatments	2	5.82	22.44	.01
		Error	142	.26		
8	Reading	Between treatments	2	1.84	2.43	NS
		Error	146	.76		
8	Arithmetic	Between treatments	2	1.99	1.79	NS
		Error	146	.76		
8	Language	Between treatments	2	1.28	1.36	NS
		Error	146	.94		
8	Total	Between treatments	2	.23	.60	NS
		Error	146	.39		
11	Reading	Between treatments	2	13.77	7.60	.01
		Error	110	1.81		
11	Arithmetic	Between treatments	2	33.94	10.34	.01
		Error	110	3.28		
11	Language	Between treatments	2	7.77	4.52	.05
		Error	110	1.72		
11	Total	Between treatments	2	16.02	11.32	.01
		Error	110	1.41		

(b) When comparing the total achievement gains between the low and transitional expenditure school years, no significant differences were found. Literally, this means that students who attended the schools in San Juan during the transitional expenditure school year, 1958, did not attain significantly higher achievement scores than the students who attended the same schools during the low expenditure school year, or five years previous.

(c) When comparing the total achievement gains between the transitional and high expenditure school years, significant differences were found. In essence, this means that students who attended the schools in San Juan during the high expenditure school year, 1965, did attain significantly higher achievement scores than the students who attended the same schools during the transitional school year, or seven years previous.

The first research hypothesis states, "There will be a significant difference in the achievement gains among three groups of students selected from the total school population for three different expenditure years." This hypothesis states that there are differences among learning opportunities for the three different expenditure years, and that the amount of expenditures per pupil was expected to influence the achievement opportunities of students in the San Juan School District.

Statistical information presented in Table 29 shows that significant achievement differences did exist among the three groups of students and expenditure years. Therefore, the first research hypothesis

Table 29. Mean grade achievement placement scores in reading, arithmetic, language arts and total achievement on the California Achievement Test among three expenditure years and three groups of students

Group treatment	School year	N	Total achievement					Reading				Arithmetic				Language			
			Mean I.Q.	Mean	Adj. Mean	SE_D	Sig.	Mean	Adj. Mean	SE_D	Sig.	Mean	Adj. Mean	SE_D	Sig.	Mean	Adj. Mean	SE_D	Sig.
Low expend.	53	190	102.8	7.25	7.33			7.18	7.27			7.21	7.30			7.39	7.46		
vs.						.05	S*			.06	S*			.07	S*			.06	S*
High expend.	65	268	105.8	7.86	7.75			7.94	7.80			7.88	7.78			7.81	7.71		
Low expend.	53	190	102.8	7.25	7.33			7.18	7.27			7.21	7.78			7.81	7.71		
vs.						.05	NS			.06	NS			.07	NS			.06	NS
High expend.	58	273	103.2	7.25	7.30			7.36	7.40			7.17	7.30			7.30	7.46		
Low expend.	58	273	103.2	7.25	7.30			7.36	7.40			7.17	7.22			7.30	7.35		
vs.						.04	S*			.06	S*			.06	S*			.05	S*
High expend.	65	268	105.8	7.86	7.75			7.94	7.80			7.88	7.78			7.81	7.71		

* Significant at the .01 level.
** Significant at the .05 level.
NS Not significant.

must be accepted and the null hypothesis rejected.

Findings of the reading, arithmetic, and language achievement scores among three expenditure years and three groups of students

Table 29 compares the achievement means among three expenditure years and for three groups of students in the areas of reading, arithmetic, and language arts. Statistical information from this Table indicates that:

(a) When comparing the reading, arithmetic, and language achievement gains for the low and high expenditure school years, significant differences were found in each of the areas. Essentially, this means that students who attended the schools in San Juan during the high expenditure school year, 1965, did attain significantly higher achievement scores in the reading, arithmetic, and language areas than the students who attended the same schools during the low expenditure year of 1953.

(b) When comparing the reading, arithmetic, and language achievement gains for the low and transitional school years, there were no significant differences in any of the skills. This would mean that students who attended the schools in San Juan during the transitional school year, 1958, did not attain significantly higher achievement scores in the reading, arithmetic, and language skills than the students who attended the same schools during the low expenditure school year, or 1953.

(c) When comparing the reading, arithmetic, and language achievement

gains for the transitional and high expenditure school years, significant differences were found in each skill. This would indicate that the students who attended the schools in San Juan during the high expenditure school year, 1965, did attain significantly higher achievement scores in the reading, arithmetic, and language skills, than the students who attended the same schools during the transitional expenditure school year, 1958.

The second research hypothesis states, "There will be a significant difference in the achievement gains in reading, arithmetic, and language among three groups of students selected from the total school population for three different expenditure years." Statistical information presented in Table 29 confirms this hypothesis and rejects the null hypothesis used in the statistical analysis.

Findings of the mean achievement scores in reading arithmetic, language arts, and total achievement among three expenditure years and within each grade level

The individual comparisons between adjusted treatment means were based on Duncan's Multiple Range Test. Results from this test for each grade level are shown in Tables 30 through 34.

Table 30 compares the mean achievement scores among expenditure years and within the third grade level. Careful examination of this table indicates that:

(a) When comparing the mean achievement scores in reading, significant differences were found between the low and high expenditure group

Table 30. Mean grade achievement placement scores in reading, arithmetic, language arts, and total achievement on the California Achievement Test among three expenditure years and within the third grade

Group treatment	School year	N	Mean I.Q.	Total Achievement					Reading					Arithmetic					Language				
				Mean	SD	Adj. Mean	SE_D	Sig.	Mean	SD	Adj. Mean	SE_D	Sig.	Mean	SD	Adj. Mean	SE_D	Sig.	Mean	SD	Adj. Mean	SE_D	Sig.
Low expend.	53	44	101.7	3.98	.69	4.13			4.00	.76	4.17			3.97	.78	4.12			3.96	.88	4.09		
vs.							.08	S*				.10	S*				.11	S*				.09	NS
High expend.	65	64	105.0	4.61	.60	4.56			4.69	.86	4.62			4.64	.53	4.59			4.38	.66	4.33		
Low expend.	53	44	101.7	3.98	.69	4.13			4.00	.76	4.17			3.97	.78	4.12			3.96	.88	4.09		
vs.							.08	NS				.10	NS				.11	NS				.92	NS
Trans. expend.	58	70	104.0	4.02	.58	4.02			4.29	.83	4.30			3.87	.56	3.87			3.94	.69	3.94		
Trans. expend.	58	70	104.0	4.02	.58	4.02			4.29	.83	4.30			3.87	.56	3.87			3.94	.69	3.94		
vs.							.08	S*				.10	S**				.11	S*				.92	S*
High expend.	65	64	105.0	4.61	.60	4.56			4.69	.86	4.62			4.64	.53	4.59			4.38	.66	4.33		

* Significant at the .01 level.
** Significant at the .05 level.
NS Not significant.

of students, between the transitional and high expenditure group of students, but not between the low and transitional expenditure group of students.

(b) When comparing the mean achievement scores in arithmetic, significant differences were found between the low and high expenditure groups of students, between the transitional and high expenditure groups of students, but not between the low and transitional expenditure group of students.

(c) When comparing the mean achievement scores in language arts, significant differences were found between the transitional and high expenditure group of students, but not between the low and high expenditure group of students nor between the low and transitional expenditure group of students.

(d) When comparing the mean achievement scores for the total test battery, significant differences were found between the low and high expenditure group of students, between the transitional and high expenditure group of students, but not between the low and transitional expenditure group of students.

Table 31 compares the mean achievement scores among expenditure years and within the fifth grade level. Examination of this table indicates that:

(a) When comparing the mean achievement scores in reading, significant differences were found between the low and high expenditure group of students, between the transitional and high expenditure group of

Table 31. Mean achievement grade placement scores in reading, arithmetic, language arts, and total achievement on the California Achievement Test among three expenditure years and within the fifth grade

Group treatment	School year	N	Mean I.Q.	Total achievement					Reading					Arithmetic					Language				
				Mean	SD	Adj. Mean	SE_D	Sig.	Mean	SD	Adj. Mean	SE_D	Sig.	Mean	SD	Adj. Mean	SE_D	Sig.	Mean	SD	Adj. Mean	SE_D	Sig.
Low expend.	53	38	103.8	5.97	.58	6.00			5.98	.92	6.00			5.96	.63	5.98			6.28	.83	6.30		
vs.							.10	S*				.08	S*				.12	NS				.10	S*
High expend.	65	55	103.2	6.70	.85	6.77			6.38	1.51	6.43			6.18	.60	6.24			6.69	1.14	6.74		
Low expend.	53	38	103.8	5.97	.58	6.00			5.98	.92	6.00			5.96	.63	5.98			6.28	.83	6.30		
vs.							.11	NS				.09	NS				.12	NS				.10	NS
Trans. expend.	58	50	101.4	5.84	.71	6.10			5.79	1.16	5.96			5.61	.61	5.78			6.13	.86	6.28		
Trans. expend.	58	50	101.4	5.84	.71	6.10			5.79	1.16	5.96			5.61	.61	5.78			6.13	.86	6.28		
vs.							.11	S*				.09	S*				.12	S*				.10	S*
High expend.	65	55	103.2	6.70	.85	6.77			6.38	1.51	6.43			6.18	.10	6.24			6.69	1.14	6.74		

* Significant at the .01 level.

NS Not significant.

students, but not between the low and transitional expenditure group of students.

(b) When comparing the mean achievement scores in arithmetic, significant differences were found between the low and high expenditure group of students, but not between the low and high expenditure group of students nor between the low and transitional expenditure group of students.

(c) When comparing the mean achievement scores in language arts, significant differences were found between the low and high expenditure group of students, between the transitional and high expenditure group of students, but not between the low and transitional expenditure group of students.

(d) When comparing the mean achievement scores for the total test battery, significant differences were found between the low and high expenditure group of students, between the transitional and high expenditure group of students, but not between the low and transitional expenditure group of students.

Table 32 compares the mean achievement scores among expenditure years and within the sixth grade level. Examination of this table indicates that:

(a) When comparing the mean achievement scores in reading, significant differences were found between the low and transitional expenditure group of students (in favor of low), but not between the low and high expenditure group of students nor between the transitional and

Table 32. Mean achievement grade placement scores in reading, arithmetic, language arts, and total achievement on the California Achievement Test among three expenditure years and within the sixth grade

Group treatment	School year	N	Mean I.Q.	Total achievement					Reading					Arithmetic					Language				
				Mean	SD	Adj. mean	SE_D	Sig.	Mean	SD	Adj. mean	SE_D	Sig.	Mean	SD	Adj. mean	SE_D	Sig.	Mean	SD	Adj. mean	SE_D	Sig.
Low expend.	53	38	104.4	7.26	.76	7.26			7.07	1.01	7.05			7.63	.85	7.64			6.95	.69	6.93		
vs.							.08	S**				.11	NS				.12	S*				.10	NS
High expend.	65	54	108.8	7.31	1.21	7.03			7.32	1.74	6.99			7.45	1.18	7.16			7.19	1.27	6.93		
Low expend.	53	38	104.4	7.26	.76	7.26			7.07	1.01	7.05			7.63	.85	7.64			6.95	.69	6.93		
vs.							.08	S*				.11	S**				.12	S*				.10	NS
Trans. expend.	58	54	103.4	6.53	.77	6.57			6.64	1.30	6.70			7.46	.58	6.50			6.70	.91	6.74		
Trans. expend.	58	54	103.4	6.53	.77	6.57			6.64	1.30	6.70			7.46	.58	6.50			6.70	.91	6.74		
vs.							.08	S*				.11	NS				.12	S*				.10	NS
High expend.	65	54	108.8	7.31	1.21	7.03			7.32	1.74	6.99			7.45	1.18	7.16			7.19	1.27	6.93		

* Significant at the .01 level.
** Significant at the .05 level.
NS Not significant.

high expenditure group of students.

(b) When comparing the mean achievement scores in arithmetic, significant differences were found between the low and high expenditure group of students (in favor of low), between the low and transitional expenditure group of students (in favor of low), and between the transitional and high expenditure group of students.

(c) When comparing the mean achievement scores in language arts, no significant differences were found between any of the groups of students.

(d) When comparing the mean achievement scores for the total test battery, significant differences were found between the low and high expenditure group of students (in favor of low), between the low and transitional expenditure group of students (in favor of low), and between the transitional and high expenditure group of students.

As one examines Table 32, immediately the question arises as to the validity of the mean I.Q. score for the 1965 group of students. The 108.8 for the sixth grade group of students seems to be extremely high. However, after much investigation and deliberation, it was the opinion of the writer that since the California Test of Mental Maturity was administered by the district's qualified school counselor and since the answer sheets were corrected by the California Test Bureau, it would not be in the best interest of the study to re-test the students.

Table 33 compares the mean achievement scores among expenditure years and within the eighth grade level. Careful examination of this

Table 33. Mean achievement grade placement scores in reading, arithmetic, language arts, and total achievement on the California Achievement Test among three expenditure years and within the eighth grade

Group treatment	School year	N	Mean I.Q.	Total achievement					Reading					Arithmetic					Language				
				Mean	SD	Adj. mean	SE_D	Sig.	Mean	SD	Adj. mean	SE_D	Sig.	Mean	SD	Adj. mean	SE_D	Sig.	Mean	SD	Adj. mean	SE_D	Sig.
Low expend.	53	39	102.5	8.45	1.00	8.54			8.26	1.33	8.37			8.55	1.05	8.65			8.51	1.06	8.60		
vs.							.08	NS				.10	NS				.12	NS				.10	S**
High expend.	65	55	108.2	8.74	1.43	8.50			8.90	1.37	8.60			8.85	1.88	8.61			8.52	1.51	8.30		
Low expend.	53	39	102.5	8.45	1.00	8.54			8.26	1.33	8.37			8.55	1.05	8.65			8.51	1.06	8.60		
vs.							.08	NS				.10	S**				.12	S**				.10	NS
Trans. expend.	58	56	103.2	8.35	.91	8.40			8.71	1.30	8.77			8.21	1.27	8.27			8.27	1.14	8.32		
Trans. expend.	58	56	103.2	8.35	.91	8.40			8.71	1.30	8.77			8.21	1.27	8.27			8.27	1.14	8.32		
vs.							.08	NS				.10	NS				.12	S**				.10	NS
High expend.	65	55	108.2	8.79	1.43	8.50			8.90	1.37	8.60			8.85	1.88	8.61			8.52	1.57	8.30		

** Significant at the .05 level.
NS Not significant

Note: The F values for the eighth grade were not significant. Ordinarily, this would necessitate the use of Duncan's Multiple Range Test. However, to furnish the reader with similar information as presented for the other four grades, Duncan's test was not used.

table indicates that:

(a) When comparing the mean achievement scores in reading, significant differences were found between the low and transitional expenditure group of students, but not between the low and high expenditure groups nor the transitional and high expenditure groups.

(b) When comparing the mean achievement scores in arithmetic, significant differences were found between the low and transitional expenditure group of students (in favor of low), between the transitional and high expenditure group of students, but not between the low and high expenditure group of students.

(c) When comparing the mean achievement scores in language arts, significant differences were found between the low and high expenditure group of students (in favor of low), but not between the low and transitional groups nor the transitional and high expenditure group of students.

(d) When comparing the mean achievement scores for the total test battery, no significant differences were found between any of the groups of students.

Table 33 shows that in all instances the mean achievement score for the high expenditure group of students exceeds the mean achievement score for both the low and transitional groups; nevertheless, as previously mentioned, since the I.Q. scores are used in the statistical computation of the adjusted mean and due to the large variation of the I.Q. score among years, all of the final adjusted means changed

considerably from their original mean.

Table 34 compares the mean achievement scores among expenditure years and within the eleventh grade level. Examination of this table indicates:

(a) When comparing the mean achievement scores in reading, significant differences were found between the low and transitional expenditure group of students, between the low and high expenditure group of students, and between the transitional and high expenditure group of students.

(b) When comparing the mean achievement scores in arithmetic, significant differences were found between the low and transitional expenditure group of students, between the low and high expenditure group of students, and between the transitional and high expenditure group of students.

(c) When comparing the mean achievement scores in language arts, significant differences were found between the low and high expenditure group of students, between the transitional and high expenditure group of students, but not between the low and transitional expenditure group of students.

(d) When comparing the mean achievement scores for the total test battery, significant differences were found between the low and high expenditure group of students, between the low and transitional expenditure group of students, and between the transitional and high expenditure group of students.

Table 34. Mean achievement grade placement scores in reading, arithmetic, language arts, and total achievement on the California Achievement Test among years and within the eleventh grade

Group treatment	School year	N	Mean I.Q.	Total achievement					Reading					Arithmetic					Language				
				Mean	SD	Adj. mean	SE_D	Sig.	Mean	SD	Adj. mean	SE_D	Sig.	Mean	SD	Adj. mean	SE_D	Sig.	Mean	SD	Adj. mean	SE_D	Sig.
Low expend.	53	31	101.5	10.57	1.47	10.74			10.59	1.56	10.78			9.94	1.94	10.10			11.26	1.50	11.41		
vs.							.09	S*				.12	S*				.13	S*				.11	S*
High expend.	65	40	104.2	12.25	2.18	12.25			12.11	2.08	12.11			12.28	3.00	12.28			12.26	1.90	12.26		
Low expend.	53	31	101.5	10.74	1.47	10.74			10.59	1.56	10.78			9.94	1.94	10.10			11.26	1.50	11.41		
vs.							.09	S*				.11	S*				.13	S*				.11	NS
Trans. expend.	58	43	104.2	11.54	1.78	11.54			11.32	1.88	11.32			11.70	2.32	11.70			11.47	1.81	11.46		
Trans. expend.	58	43	104.2	11.54	1.78	11.54			11.32	1.88	11.32			11.70	2.32	11.70			11.47	1.81	11.46		
vs.							.09	S*				.11	S*				.13	S*				.11	S*
High expend.	65	40	104.2	12.25	2.18	12.25			12.11	2.08	12.11			12.28	3.00	12.28			12.26	1.90	12.26		

* Significant at the .01 level.
NS Not significant.

The achievement differences among years for the eleventh grade are more pronounced than for any of the other four grades used in this study. For example, there is almost a year's difference in the adjusted mean among years for each of the three different expenditure years.

The third research hypothesis states, "There will be a significant difference in the achievement gains within the same grade level for students selected from the total school population for three different expenditure years. Statistical information presented in Tables 30 through 34 indicate that with the exception of the eighth grade there is a significant difference in the achievement means within each of the other four grades. Therefore, the research hypothesis must be accepted and the null hypothesis used in the statistical analysis rejected.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

The two primary purposes of this study were: (a) to determine what money has bought to enhance "learning opportunities" in the San Juan School District, and (b) to determine if efficient use has been made of the money that has been spent for school expenditures, as determined by achievement gains of students from three different expenditure years.

School expenditures

San Juan's administrative expenditures per pupil in average daily attendance have been consistently higher than Utah's since 1951. However, this is not too surprising because of the district's relatively small student enrollment. Theoretically, if the district's enrollment doubled overnight, the administrative expenditures would be reduced substantially without over-burdening the present administrative facilities or staff.

San Juan spent $388 per pupil for instruction as compared to $300 for Utah in 1965. This differential appears to be important since instruction consists of the following items which are directly involved

in the teaching process: teacher's salaries, textbooks, library materials, instructional supplies, and other expenses.

A careful examination of instructional expenditures shows that the years in which San Juan's assessed valuation took its biggest increase was also the same year that instructional expenditures forged ahead of Utah's. For example, from 1958 to 1960 the assessed valuation increased from $18,215 to $69,109 per census child, while the instructional costs also rose from $205 to $313 per pupil. Comparing this on a ranking basis with the other 40 Utah districts, San Juan's instructional expenditures changed from 25 to 4 in this same two year span.

In 1959 the district was one year away from reaching its highest assessed valuation and this is the same year that the differential between San Juan and Utah's instructional expenditures began to be noticeable. For example, combining the next six years, San Juan exceeded Utah by $92 or 26 percent more per pupil in average daily attendance.

Salaries paid to teachers underwent a tremendous transition during the 15 years covered in this study. In each of the years from 1951 to 1959, the average salary paid to teachers in San Juan ranked in the lower 15 percent, when compared with the other 40 Utah school districts. However, beginning in 1961 salaries in San Juan took a sharp increase and thereafter exceeded the average annual salary paid to Utah teachers by $353 per year.

The trend for textbook expenditures was very similar to teachers'

salaries. For example, in 1962 San Juan spent $10.04 per pupil for textbooks compared to $5.11 for Utah. Since 1958 San Juan's average yearly textbook expenditure has exceeded Utah's by $2.86 per pupil or 37 percent.

Expenditures for instructional supplies have been similar to that of textbooks. Prior to 1959, San Juan and Utah expenditures for instructional supplies were about the same but commencing in 1959 San Juan spent $1.50 more per pupil than Utah.

Library expenditures received much emphasis and has been more pronounced than other items under instruction. Combining the past nine years, San Juan spent $4.15 per pupil which is $2.90 more or 332 percent more than Utah. Prior to the past nine years, however, the opposite trend was true, whereas Utah's library expenditures were 222 percent more than San Juan's.

Other average yearly expenditure for instruction in San Juan from 1951 to 1957 was $.19 per pupil as compared to Utah's $1.40. Again, as in all the other sub-categories under instruction, San Juan's expenditures in this area far surpassed Utah's after 1959 in some years twice as much was spent.

Operation and maintenance expenditures gradually and consistently increased since 1951. The biggest increase per year for maintenance was 44 percent in 1961 and 39 percent for operation in 1960. This increase resulted from the completion of several additional new school buildings which necessitated employing additional custodial personnel

and providing additional utilities, materials, cleaning supplies, and equipment.

With the rising costs of items such as insurance, retirement, social security and additional coverage extended by the district, fixed charges increased tremendously in the past few years. San Juan's fixed charges per pupil increased from $1.54 in 1951 to a staggering $43.05 in 1965, which is $11.11 higher than Utah's.

As one examines Figure 13, page 81, it is almost unbelievable that the lines representing San Juan's and Utah's net current expenditures form an almost perfect cross. For the first seven years covered by this study, San Juan's net current expenditures were somewhat below Utah's, about even the eighth year, and substantially higher for the last seven years. As in most of the expenditure categories reviewed, 1958 was the year that San Juan's and Utah's expenditures were about even, and thereafter San Juan's increased much more rapidly than did Utah's.

Expenditures for debt service has been somewhat eratic for the past 15 years. For example, in 1955 it was $64.25 per pupil and dropped to $6.29 in 1956. Here again, the relatively small pupil enrollment and yearly building programs undertaken in the district are two influencing factors affecting debt service expenditures. Generally speaking, San Juan has built most of their buildings on a pay-as-you-go basis, but because of three earlier bonding programs, debt service expenditures per pupil are currently higher than Utah's.

Expenditures for capital outlay has constituted one of the major items for the past 15 years. Figures from Table 17 show that since 1951, San Juan has engaged in 23 different building projects, resulting in 281,241 additional square feet, at a cost of $5,178,502.62. Combining the average yearly expenditure per pupil for school construction for the past 15 years, San Juan has spent $247.35 as compared to $110.68 for Utah, and $346.24 as against $126.14 for Utah since 1958.

Capital outlay expenditures per pupil for San Juan reached its peak in 1960 when $527.00 was spent as compared to $116.35 in Utah.

San Juan's total school expenditures reached its peak in 1961 when $1047 per pupil was expended which was $569 higher than Utah. Averaging the expenditures for the past eight years, San Juan spent $869 per pupil as compared to $503 for Utah. The total school expenditure seems to have reached its peak the same year that the total assessed valuation of the county reached its maximum peak, which was in 1961.

Professional personnel

Money actually bought or helped to provide the following items which helped to enhance the "learning opportunities" for the students in San Juan:

(a) The percent of certified teachers in the district increased from a low of 36.7 in 1958 to 93.2 in 1965, and from 37.3 in 1953 to 100 in 1963 for the Monticello schools. As indicated earlier, the reason the figures are given for the Monticello schools is because the

achievement tests were administered in these schools.

(b) The percentage of teachers possessing a college degree increased from 56 percent in 1954 to 100 percent in 1965.

(c) Teacher turnover decreased from 65 percent in 1957 to 16 percent in 1965.

(d) The district's teacher-pupil ratio decreased from 25.80 in 1952 to 20.69 in 1965. The Monticello Elementary School's teacher-pupil ratio decreased from 38.10 in 1952 to 25.07 in 1965, and from 24.2 in 1955 to 20.40 in 1965 for the Monticello High School.

(e) San Juan's and Utah's average minimum salary with a bachelor's degree was comparable in 1951, but San Juan's was $900 higher by 1961.

(f) San Juan's average maximum salary was $200 lower than Utah's in 1951, but increased to $987 higher in 1961.

(g) San Juan's average minimum and maximum salary for a master's degree were both below Utah's in 1951, but by 1961 were $898 and $1200 higher.

(h) On a ranking basis with Utah's other 40 districts, the total lifetime earnings for teachers in San Juan changed from 30 in 1954 to 1 in 1965.

Achievement results

As stated previously, one of the primary purposes of this study was to determine whether or not efficient use was made of the money spent for school expenditures, as determined by achievement gains of students with similar ability.

Three school years, 1953, 1958, and 1965, representative of low, transitional, and high expenditures were selected to compare the achievement gains of students.

The sample, consisting of 731 students from the three different expenditure years, was drawn from the same five grades and schools within the district.

Prior to the commencement of this study, the 1950 edition of the California Achievement Test had been given to all students selected for this study. Likewise, the same edition of the test was given to the 1965 students in the same designated schools and grades. For statistical computations individual I.Q. scores were obtained from the California Test of Mental Maturity.

The research design employed the analysis of covariance to test the significance of difference among groups. F tests were computed and when significant differences among the means existed, Duncan's Multiple Range Test was employed to determine which of the separate adjusted means were different. This design produced the following findings:

Achievement gains among three expenditure years and among three groups of students. Statistical evidence presented in Table 29 implies that there are significant differences in the achievement gains among the three expenditure years and for the three groups of students as measured by the achievement scores from the California Achievement Test. This means that the students who attended the two designated

schools in San Juan during the high expenditure school year, 1965, did attain significantly higher achievement scores than did the students who attended the same schools during either the low expenditure year, 1953, or the transitional year, 1958. However, there were no significant differences in achievement gains between the low and transitional school years.

Achievement gains among three expenditure years and among three groups of students in the areas of reading, arithmetic, and language. Statistical evidence presented in Table 29 implies that there are significant differences between the achievement gains of three groups of students and among the three expenditure years for each of the reading, arithmetic, and language areas. In essence, this means that the group of students who attended the two designated schools in San Juan during the high expenditure school year, 1965, did attain significantly higher achievement scores in the reading, arithmetic and language skills than did the groups of students who attended the same schools during either the low expenditure year, 1953, or the transitional year, 1958. However, there was no significant difference in achievement gains between the low and transitional years.

Achievement gains among years and among students within the same grade level. Third grade:

(a) When comparing the low vs. high group of students, significant differences were found in the following areas: reading, arithmetic, and for the total test. No differences were found in the

language skills.

(b) When comparing the low vs. transitional group of students, there were no significant differences found in any of the areas.

(c) When comparing the transitional vs. high group of students, significant differences were found in the following areas: reading, arithmetic, language, and for the total test.

Fifth grade:

(a) When comparing the low vs. high group of students, significant differences were found in the following areas: reading, language, and for the total test. No differences were found in the arithmetic skills.

(b) When comparing the low vs. transitional group of students, no significant differences were found.

(c) When comparing the transitional vs. high group of students, significant differences were found in the following areas: reading, arithmetic, language, and for the total test.

Sixth grade:

(a) When comparing the low vs. high group of students, significant differences in favor of the low group were found in the following areas: arithmetic, and for the total test. No differences were found in the language or reading sections of the test.

(b) When comparing the low vs. transitional group of students, significant differences in favor of the low were found in the following areas: reading, arithmetic, and for the total test. No differences

were found in the language section.

(c) When comparing the transitional vs. high group of students, significant differences were found in the following areas: arithmetic and for the total test. No differences were found in the language or reading sections.

Eighth grade:

(a) When comparing the low vs. high group of students, significant differences in favor of the low group were found in the language area. No differences in the reading, arithmetic, or for the total test were found.

(b) When comparing the low vs. transitional group of students, significant differences were found in the reading area. Also, for arithmetic, but in favor of the low group.

(c) When comparing the transitional vs. high group of students, significant differences were found in the arithmetic area.

Eleventh grade:

(a) When comparing the low vs. high group of students, significant differences were found in the following areas: reading, arithmetic, language, and for the total test.

(b) When comparing the low vs. transitional group of students, significant differences were found in the following areas: reading, arithmetic, and for the total test. No differences were found in the language area.

(c) When comparing the transitional vs. high group of students,

significant differences were found in the following areas: reading, arithmetic, language, and for the total test.

Conclusions

The "input versus output" relationship in education is not a simple one. It is difficult to identify and bring to bear all factors which are influential in producing a school system that may be worthy of educational quality. Even more involved are complex matters such as what is quality education, how is it measured, and how do you control factors other than schooling which might affect the quality measure? Research cannot quickly provide a solution to the problem.

Even so, statistical evidence presented in this study as to the correspondence between per-pupil expenditures and learning opportunities for students in San Juan is based on rational and objective data as opposed to personal opinion and captious controversy. Results from this study indicate that the amount of expenditures per-pupil does influence the level of learning as measured by achievement gains from the California Achievement Test. Unfortunately, this data does not identify nor describe the various factors responsible for this increased learning level that is prevalent in the high expenditure school year. Nevertheless, after careful analysis and deliberation, the writer submits the following conclusions:

1. Careful analysis of the assessed valuation of San Juan indicates that as the wealth of the district increased and as additional

money became available for school expenditures, San Juan achieved her "rags to riches" stature.

2. As additional money became available and provision for learning opportunities changed, educational expenditures increased.

3. As San Juan spent more money on their schools, they generally were able to employ and retain better teachers. They were able to and did provide more functionally designed and better equipped facilities, instructional materials, and other aids which presumably were helpful in providing better teaching.

4. Learning opportunities in San Juan were provided, to a greater extent, as the per-pupil expenditure increased beyond the state average; likewise, fewer learning opportunities existed when the per-pupil expenditure was below the state average.

5. Money actually purchased and retained professionally trained teachers as evidenced by improvements in the following areas: teacher certification, degreed teachers, teacher turnover, teacher-pupil ratio, annual adoption of competitive and attractive salary schedules, and the possible lifetime earning capacity of a beginning teacher.

6. This study implies that, other factors being equal, learning opportunities and expenditure levels tend to go together.

7. There is a definite correspondence between school expenditures and learning opportunities when learning opportunities are measured in terms of achievement gains from the California Achievement Test.

8. Data presented in this study reveal that higher expenditures

for schools may be expected to provide an adequate and conducive environment which may enhance the chances for each pupil to grow, develop, and realize his potentiality.

9. When San Juan's school expenditures were comparable to the state average, it is very likely that the district was harboring mediocrity and quality education would be difficult to locate within the system.

10. Often times people are content to be "equal to the average." In a school system this feeling may be expressed in salaries, numbers, achievement, expenditures, cost per meal, pupil-teacher ratio, etc. However, results from this study indicate that being "equal to the average in school expenditures," is sometimes misleading and perhaps not much better than being below the average. To illustrate, when San Juan's average expenditure per pupil was comparable to that of the state of Utah, the students in the district did not attain significantly higher scores on a standardized achievement test than did the students who attended the same schools when San Juan's average expenditure per pupil was the lowest in the state. On the other hand, when San Juan's average expenditure far exceeded Utah's, significant differences in student achievement were prevalent. Therefore, it would seem advisable for school systems throughout the country not to be complacent and satisfied to be an "average spender," but in the process of spending not to overlook the necessity of planning and development of specific criteria essential to a quality program, which eventually should lead to excellence.

11. If the significance and implication of this study is realized and brought to the public's attention, it will dispell the fallacy that the power of teacher resourcefulness, ingenuity, good will and dedicated hard work will overcome a meager budget.

12. Failure to establish a consistent pattern of significant differences in the achievement means between the low and transitional expenditure years, appears to reinforce Furno's findings (Furno, 1956, pp.47-48) that quality education is an accumulative process that extends over a period of several years, and that a sudden outpouring of money does not immediately guarantee quality education within a given school system.

Observations

People familiar with San Juan's "rags to riches" transition possess unsupported opinion that the schools within the district today are much better and vastly improved over those of the 1950's. Undoubtedly, these same people would agree that the underlying process of this educational improvement has transpired as the result of adequate financial support. Also, many would agree that money alone has not automatically provided all of the essentials for learning opportunities, but the presence or absence of factors other than money have their effect on the schools.

In searching for the answer as to why the students in San Juan obtained higher achievement gains during the high expenditure school year, 1965, many complex and inter-related factors are involved. True,

adequate finances provided fine new facilities, equipment, books, instructional aids, and up-to-date practices, but regardless of the availability of these items, the educational program is only as good as the teachers make it. In order to obtain the maximum educational values, these facilities require teachers who are competent, ambitious, resourceful, dedicated, well-trained, understanding, creative, and flexible.

Therefore, it is the writer's observation that the most significant thing that money did for San Juan was to provide the financial resources to employ teachers with more and better preparation. It is the writer's opinion that there is a closer correspondence between the expenditure level and the preparation of the teaching staff than any other measure of school quality.

With respect to the above opinion it is recommended that some educational agency, preferably the Utah State Board of Education, carefully consider the feasibility of the formulation of the following two plans:

1. A State Professional Personnel Index Scale. This scale would allow additional financial compensation to the small isolated school districts to be used for the procurement of qualified teachers. This additional assistance, over and above the regular distribution unit, would be used for teachers' salaries and would serve as a "quality incentive" for the outlying districts to compete in the employment of the best teachers in the state.

This index would certainly complement and extend Utah's present equalization theory, "that every child is entitled to a minimum education," and would also assure the outlying districts of equal opportunities to attract and retain the most vital factor in the provision of this minimum education, the competent teacher.

This recommendation is an out-growth of years of frustration that San Juan has experienced in trying to employ some of the "quality teachers" throughout the state. Even with the present salary schedule, which is highly competitive, it is extremely difficult to entice qualified teachers to leave the urban centers. If the time comes when San Juan's natural resources are depleted and local funds are not available to supplement teachers' salaries, the students and parents within the district will be at a distinct disadvantage in their exposure to "the equalization of teacher competencies throughout the state of Utah."

2. The second plan for consideration by the State agency is a State Professional Personnel Rotation Plan. This plan would be designed specifically to benefit teachers who wanted to teach in an outlying school district for several years and then move to a larger district located near the populated centers.

It seems as though the current practice is to encourage beginning teachers to teach in an outlying district during their "probationary or training period," and then return to the larger cities. Often times, new teachers find a small district to their liking, but hesitate to remain beyond three years because of the existing philosophy that any

teaching experience beyond three years is detrimental inasmuch as a teacher is often penalized by a reduction in the total number of years taught outside the district that he is applying.

Therefore, it is the recommendation of this writer that teachers who remain in the small outlying district for several years, should have ample assurance that if they wanted to move to another district they could do so without fear of losing all of their prior teaching experience by having to start near the bottom of the salary schedule. This assurance would certainly extend the equalization theory in another direction and would enrich and strengthen the learning opportunities of the students.

Theoretically, most school districts throughout the nation levy the maximum taxes and expend as much money as the law will allow them to do so. Even so, with few exceptions, it does not appear that there is ample money available to meet the financial demands of school districts. An earlier observation indicates that the most significant thing money did for San Juan was to provide the resources to employ and retain competent teachers. Therefore, it is recommended that if Federal programs and money continue to be readily accessible, that a concerted effort be made through all possible agencies and channels to allocate a portion of federal money to supplement teachers' salaries. This allocation could be based on criteria designed to further enhance the preparation, training and image of teachers.

An analysis of the 11 expenditure categories (Tables 3 through 18) indicates that when comparing San Juan's and Utah's per pupil expenditures, it is obvious that San Juan has made substantial gains during the past decade. However, it could also be surmised that San Juan's financial effort has not been as overwhelming as one might expect from a district that in 1965 levied 32.70 mills for school purposes as compared to Utah's average levy of 49.00 mills, (Utah School Report, 1966, p. 25). Further evidence of this lack of financial effort is found in Table 15. This table shows that in 1965 San Juan ranked sixth in net current expenditures per pupil. It is very likely that with a little added effort by San Juan that the achievement gains in all areas and specifically language arts could have shown larger gains over the past years.

LITERATURE CITED

Ayres, Lenard P. 1920. An Index Number for State School Systems. New York: Department of Education, Russell Sage Foundation.

Bothwell, Bruce K. 1958. Creative Expenditures for Quality Education. New York: Associated Public School System.

Brickell, Henry M. 1953. An Analysis of Certain Non-instructional Staff Expenditures. Doctor's Project. New York: Teachers College, Columbia University.

Bloom, Benjamin S. 1956. The 1955 Normative Study of the Tests of General Educational Development. School Review 64:110-124, March.

Bloom, Benjamin S., and Charles R. Statler. 1957. Changes in the States on the Tests of General Educational Development from 1943 to 1955. School Review 65:204-221, Summer.

Borg, Walter R. 1963. Educational Research An Introduction. New York: David McKay Company, Inc.

Buros, Oscar K. 1953. The Fourth Mental Measurements Yearbook. Highland Park, New Jersey: The Gryphan Press.

Catmull, Alvin E. 1965. A Study of Adequacy of Teaching Materials in Utah Public Schools. Unpublished Doctor's Dissertation. University of Utah Library, Salt Lake City, Utah.

Commission on the Legan Structure of Rhode Island Public Education. 1941. Schools for Our Children, Volume I. Providence, Rhode Island: The Commission.

Connecticut Citizens for the Public Schools, Committee on Financing Education. 1957. A Study of Factors Related to Academic Achievement in the Public Schools. Hartford, Connecticut: Connecticut Citizens for the Public Schools.

Dethy, Ray C. 1964. The Relationship Between Per Pupil Expenditures and Services Received at Varying Expenditure Levels in Selected Ohio School Districts. Dissertation Abstracts, 24(11), May.

Ferrell, Doctor Thomas. 1936. Relation Between Current Expenditures and Certain Measures of Educational Efficiency in Kentucky County and Graded School Systems. Contributions to Education, No. 216. Nashville, Tennessee: George Peabody College for Teachers.

Furno, Frederick O. 1956. The Projection of School Quality from Expenditure Level. Doctor's Dissertation, Columbia University Library, New York, New York.

Garrett, Henry E. 1962. Statistics in Psychology and Education. New York: David McKay Company, Inc.

Gay, Grant Vernon. 1962. A Cost of Education Index for Utah Public School Districts. Unpublished Doctor's Dissertation, University of Utah Library, Salt Lake City, Utah.

Griffis, James T. 1955. Educational Production at Three Cost Levels. Houston, Texas: Gulf School Research Development Association.

Grimm, Lester R. 1938. Our Children's Opportunities in Relation to School Costs. Springfield, Illinois: Department of Research and Statistics, Illinois Education Association.

Kentucky State Department of Education. 1965. Do Good Schools Cost More? School Management 9:127, January.

McLure, William P. 1948. Let Us Pay for the Kind of Education We Need; Report of a Study of State and Local Support of Mississippi's Schools. University, Mississippi: Bureau of Educational Research, University of Mississippi.

Minerals Yearbook. 1960. Vol. III. United States Bureau of Mines.

Mort, Paul R. (Dir.). 1933. Reconstruction of the System of Public School Support in the State of New Jersey. Report of the Governor's School Survey Commission, Vol. 2. Trenton, New Jersey: Governor's School Survey Commission.

Mort, Paul R. (Dir.). 1934. Maine School Finance Commission. The Financing of the Public Schools of Maine. Report of a Survey of State and Local Support of Public Schools. Augusta, Maine: The Commission.

Mort, Paul R. 1962. What Can Comparison Prove? School Management 6:129, January.

Mort, Paul R. and Francis G. Cornell. 1937. A Guide for Self-Appraisal of School Systems. New York: Bureau of Publication, Teachers College, Columbia University.

Mort, Paul R. and Francis G. Cornell. 1941. American Schools in Transition. New York: Bureau of Publication, Teachers College, Columbia University.

Mort, Paul R., William S. Vincent, and Clarence A. Newell. 1946. The Growing Edge: An Instrument for Measuring the Adaptability of School Systems. New York: Metropolitan School Study Council, Teachers College, Columbia University.

New York State Educational Conference Board. 1943. What Education Our Money Buys. Albany, New York: The Conference Board.

Powell, Orrin E. 1933. Educational Returns at Varying Expenditure Levels. Contributions to Education, No. 573. New York: Teachers College, Columbia University.

Norton, John K. 1926. The Ability of States to Support Education. Washington, D. C.: National Educational Association.

Reason, Paul and Alpheus L. White. 1957. Financial Accounting for State and Local School Systems. Washington, D. C. U. S. Department of Health, Education, and Welfare, Office of Education.

Report on the Quality Measurement Project. 1958. New York: Research Office, New York State Education Department.

Ross, Donald R. 1958. Administration for Adaptability. New York: Metropolitan School Study Council.

School Board Minute Book. 1951-1965. Monticello, Utah: San Juan School District.

School Management's Cost of Education Index. 1966. How the School Dollar is Being Spent. School Management 10:126, January.

Smith, Stanley V. 1954. Quality of Education Related to Certain Social and Administrative Characteristics of Well-financed Rural School Districts. Doctor's Dissertation, Columbia University Library, New York.

Strayer, George D. (Dir.). 1945. A Report of a Survey of Public Education in the State of West Virginia. Charleston, West Virginia: Legislative Interim Committee, State of West Virginia.

Utah School Report. 1950-1965. Salt Lake City, Utah: Department of Public Instruction.

Utah State Board of Education. 1964. Achievement of Utah Students. Salt Lake City, Utah: Department of Public Instruction.

APPENDIX

Table 35. Achievement grade placement scores, third grade--1953

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
03013	4.8	4.0	5.3	4.6	108
03023	5.0	4.7	5.0	4.9	117
03033	4.7	5.4	4.7	5.0	121
03043	4.5	4.4	5.0	4.6	101
03053	4.3	4.0	5.0	4.3	115
03063	3.4	3.9	4.4	3.9	83
03073	2.4	3.5	3.2	3.0	90
03083	2.9	3.0	3.2	3.0	84
03093	4.3	4.7	4.0	4.4	103
03103	3.2	3.8	3.4	3.5	85
03113	3.5	3.6	3.4	3.5	101
03123	4.8	5.7	3.6	4.9	123
03133	4.0	3.6	3.8	3.8	100
03143	5.4	5.0	4.1	4.8	131
03153	4.1	4.4	4.6	4.4	117
03163	4.2	5.1	4.7	4.7	114
03173	3.7	4.5	4.2	4.2	96
03183	3.9	4.3	4.7	4.3	96
03193	4.6	4.0	5.5	4.5	108
03203	4.0	4.1	3.4	3.9	98
03213	5.7	5.3	4.0	5.1	136
03223	3.7	3.9	3.2	3.7	90
03233	2.8	3.1	2.1	2.8	76
03243	5.1	5.3	4.3	5.0	116
03253	4.0	4.1	5.2	4.3	101
03263	3.7	3.3	3.5	3.4	108
03273	5.5	4.6	5.7	5.1	122
03283	4.0	4.2	4.8	4.3	89
03293	4.8	4.3	4.6	4.5	106
03303	4.5	3.3	4.1	3.9	105
03313	4.1	4.6	4.5	4.4	124
03323	3.9	3.5	3.3	3.6	90
03333	4.3	3.9	4.0	4.1	121
03343	4.4	4.6	4.5	4.5	110
03353	3.7	2.8	4.0	3.5	82
03363	3.3	2.5	3.7	3.0	95
03373	2.6	3.4	2.5	3.0	90
03383	3.1	3.4	2.4	3.1	80
03393	3.3	3.0	2.4	3.0	95
03403	3.6	3.3	3.2	3.4	92

Table 35. (Cont'd.)

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total Battery	
03413	4.0	3.5	3.2	3.6	105
03423	3.7	3.0	2.9	3.3	81
03433	3.2	3.3	3.4	3.3	82
03443	3.3	2.8	3.3	3.1	88

Table 36. Achievement grade placement scores, third grade--1958

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total Battery	
03018	6.0	4.4	5.7	5.0	127
03028	5.4	4.2	4.9	4.7	115
03038	5.4	4.0	4.8	4.5	115
03048	5.0	4.1	4.1	4.3	95
03058	4.5	4.0	4.4	4.3	113
03068	5.0	3.7	4.2	4.3	111
03078	4.4	3.8	4.0	4.2	119
03088	4.4	4.4	4.2	4.2	109
03098	4.8	3.9	3.8	4.2	114
03108	5.0	3.6	4.1	4.1	104
03118	4.1	3.6	4.3	4.0	112
03128	4.5	3.8	3.5	4.0	98
03138	4.3	4.0	3.0	3.9	115
03148	4.1	3.9	3.6	3.9	110
03158	4.0	3.7	3.5	3.8	111
03168	3.6	3.7	3.9	3.7	102
03178	3.9	3.7	2.9	3.7	106
03188	4.3	3.1	3.8	3.7	98
03198	3.9	3.5	3.3	3.6	91
03208	4.1	3.5	2.9	3.6	95
03218	3.0	4.1	4.2	3.6	98
03228	3.4	3.1	4.3	3.5	99
03238	3.1	3.2	4.0	3.3	78
03248	3.2	3.1	3.3	3.2	100
03258	3.3	2.6	3.8	3.1	77
03268	2.2	2.3	2.8	2.3	65
03278	4.9	4.8	4.3	4.7	125
03288	4.8	4.3	4.8	4.5	120
03298	4.9	4.2	4.7	4.5	111
03308	4.7	4.2	4.2	4.4	99
03318	4.9	4.1	4.0	4.3	114
03328	4.7	4.1	4.1	4.3	106
03338	4.8	4.0	4.1	4.3	98
03348	4.8	4.2	3.6	4.2	115
03358	4.5	4.0	4.2	4.2	104
03368	4.7	3.9	4.1	4.2	102
03378	4.7	4.0	3.8	4.2	109
03388	4.1	4.0	3.7	4.0	97
03398	4.4	3.9	3.0	3.8	97
03408	4.1	3.5	3.6	3.7	110
03418	4.2	3.5	3.0	3.7	93
03428	4.5	3.2	3.0	3.7	91

Table 36. (Cont'd.)

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
03438	3.7	3.1	4.0	3.5	110
03448	3.1	3.6	3.5	3.4	112
03458	3.2	3.5	3.3	3.4	90
03468	3.6	3.2	3.3	3.4	90
03478	3.1	3.5	3.0	3.3	93
03488	3.1	3.2	2.8	3.1	100
03498	2.4	3.4	3.2	3.0	85
03508	5.3	3.1	4.8	5.2	115
03518	5.1	4.4	5.9	5.0	120
03528	5.1	4.6	4.9	4.9	115
03538	4.9	4.8	4.7	4.9	132
03548	5.0	4.3	5.0	4.7	100
03558	4.8	4.5	4.5	4.6	110
03568	4.7	4.8	4.7	4.5	111
03578	5.6	4.0	4.7	4.5	121
03588	5.1	4.3	4.5	4.5	108
03598	4.9	4.1	4.4	4.4	118
03608	4.5	4.5	4.1	4.4	116
03618	5.6	4.5	3.0	4.4	95
03628	5.1	4.2	4.0	4.4	104
03638	4.3	4.3	4.3	4.3	118
03648	4.8	4.0	4.3	4.3	104
03658	4.4	4.3	4.1	4.3	94
03668	3.7	4.1	3.9	3.9	123
03678	3.5	4.1	3.7	3.8	98
03688	3.4	3.9	3.8	3.7	85
03698	3.6	2.9	3.8	3.4	77
03708	2.1	2.4	2.2	2.3	72

Table 37. Achievement grade placement scores, third grade--1965

Student number	Achievement grade placement				I.Q.
	Reading	Arithmetic	Language	Total Battery	Score
03015	5.4	5.8	5.1	5.5	129
03025	5.9	5.3	5.0	5.3	111
03035	5.3	5.3	4.8	5.1	109
03045	6.0	4.8	4.7	5.1	122
03055	5.5	5.1	4.5	5.1	118
03065	5.0	5.1	4.7	5.0	103
03075	4.9	5.1	4.6	5.0	107
03085	5.1	5.0	4.6	5.0	116
03095	5.1	5.0	4.7	5.0	110
03105	4.9	5.1	4.3	4.9	101
03115	5.0	5.0	4.1	4.8	94
03125	4.9	4.8	4.4	4.8	111
03135	4.7	5.0	4.1	4.8	97
03145	4.8	4.8	4.3	4.8	106
03155	4.8	4.7	4.4	4.7	108
03165	4.9	4.4	4.8	4.7	102
03175	4.7	4.6	4.7	4.7	99
03185	4.3	4.7	4.7	4.7	102
03195	4.7	4.6	4.3	4.7	104
03205	4.0	4.5	3.4	4.4	108
03215	4.4	4.5	3.5	4.3	107
03225	3.1	4.8	5.0	4.3	120
03235	4.5	4.2	4.0	4.2	110
03245	4.4	3.9	4.3	4.2	90
03255	4.5	4.3	3.4	4.2	88
03265	4.3	4.3	3.6	4.1	90
03275	3.9	4.2	4.1	4.1	88
03285	3.6	4.2	3.3	4.0	96
03295	3.8	4.0	3.8	4.1	65
03305	4.3	3.4	4.1	3.9	84
03315	3.7	3.9	3.7	3.8	99
03325	1.7	3.1	2.1	2.4	94
03335	5.9	5.3	5.2	5.4	132
03345	6.0	5.3	5.3	5.5	120
03355	5.5	5.1	5.8	5.4	118
03365	5.9	5.1	5.2	5.4	128
03375	6.0	5.1	5.2	5.3	119
03385	5.3	5.1	5.3	5.2	111
03395	5.6	4.8	5.1	5.2	100
03405	5.6	5.1	4.7	5.2	118
03415	5.3	5.1	4.8	5.1	118
03425	5.5	5.0	5.0	5.1	108

Table 37. (Cont'd.)

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total Battery	
03435	5.1	4.8	5.8	5.1	120
03445	5.5	4.8	5.1	5.1	113
03455	5.6	4.8	4.6	5.0	109
03465	5.5	4.8	4.6	5.0	119
03475	5.0	5.0	4.6	4.9	97
03485	4.5	5.1	4.5	4.8	112
03495	4.8	4.7	4.3	4.7	108
03505	5.0	4.8	4.1	4.7	105
03515	4.8	4.7	4.1	4.7	106
03525	4.7	4.5	4.4	4.7	112
03535	4.7	4.5	4.3	4.5	107
03545	3.8	4.7	4.9	4.5	108
03555	4.4	4.4	4.3	4.4	105
03565	4.1	4.6	4.1	4.3	112
03575	4.5	4.3	3.9	4.3	98
03585	4.1	4.2	4.3	4.2	96
03595	3.7	4.4	3.3	4.0	108
03605	3.6	4.3	3.5	3.9	97
03615	3.5	4.2	3.4	3.8	88
03625	3.6	4.6	4.1	3.8	83
03635	2.9	3.3	3.6	3.2	88
03645	2.9	3.1	3.6	3.1	71

Table 38. Achievement grade placement scores, fifth grade--1953

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total Battery	
05013	8.2	6.7	7.3	7.1	113
05023	7.3	7.1	6.8	7.1	113
05033	7.3	6.2	8.7	6.8	115
05043	7.3	6.6	7.9	6.8	115
05053	7.4	6.1	7.1	6.6	106
05063	6.4	6.2	7.5	6.5	104
05073	7.5	6.2	6.5	6.5	112
05083	7.1	6.1	6.6	6.4	114
05093	6.5	6.4	6.5	6.4	125
05103	6.2	6.2	6.9	6.3	112
05113	6.0	6.4	6.3	6.3	104
05123	5.9	6.3	6.5	6.3	108
05133	5.7	6.1	6.9	6.2	107
05143	5.2	6.9	6.1	6.2	107
05153	5.9	5.8	6.5	6.0	108
05163	5.9	6.9	6.8	6.1	109
05173	6.0	6.0	6.5	6.1	105
05183	5.7	6.2	6.6	6.1	103
05193	5.6	6.2	6.1	6.1	101
05203	5.8	6.3	5.7	6.0	103
05303	4.6	6.1	5.8	5.6	96
05313	5.3	5.5	5.9	5.6	98
05323	5.0	5.3	6.1	5.4	102
05333	5.4	6.1	5.5	5.3	93
05343	5.2	4.7	5.4	5.1	98
05353	4.2	5.8	4.6	5.0	88
05363	4.5	5.5	5.4	5.1	90
05373	5.3	5.5	4.5	5.2	89
05383	4.7	3.6	5.8	4.5	87

Table 39. Achievement grade placement scores, fifth grade--1958

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
05018	6.5	6.4	7.1	6.6	120
05028	7.8	6.2	6.1	6.5	123
05038	6.9	5.6	6.6	6.2	99
05048	6.5	5.5	7.1	6.1	99
05058	5.0	6.2	7.1	6.0	97
05068	6.0	5.3	6.8	5.9	94
05078	5.6	5.9	5.9	5.9	105
05088	6.1	5.4	6.5	5.9	102
05098	6.1	5.6	6.3	5.9	97
05108	6.8	5.3	6.1	5.9	110
05118	6.1	5.8	5.9	5.9	101
05128	5.9	5.4	6.1	5.8	99
05138	5.0	5.9	6.6	5.8	97
05148	5.9	5.3	6.3	5.7	102
05158	5.7	5.8	5.5	5.7	106
05168	5.3	5.5	5.5	5.5	101
05178	5.3	5.1	5.8	5.4	85
05188	5.0	5.7	5.5	5.4	80
05198	4.6	4.9	5.6	5.1	80
05208	4.9	5.0	5.5	5.1	95
05218	5.9	5.5	5.5	5.7	99
05228	4.1	4.7	5.0	4.5	77
05238	3.1	4.2	3.3	3.6	84
05248	7.0	6.4	7.2	6.7	111
05258	6.8	6.4	7.0	6.7	129
05268	7.6	6.5	7.2	6.7	110
05278	6.6	6.3	7.4	6.6	113
05288	6.8	6.2	7.3	6.6	126
05298	7.9	6.4	6.5	6.6	111
05308	7.2	6.1	7.3	6.6	110
05318	7.2	6.0	7.1	6.5	115
05328	7.2	5.9	7.2	6.5	121
05338	7.5	6.2	7.1	6.5	114
05348	7.8	5.8	6.9	6.5	110
05358	7.8	6.0	5.8	6.3	109
05368	5.4	6.5	6.7	6.2	96
05378	6.2	6.3	5.8	6.2	114
05388	5.8	6.2	6.2	6.1	115
05398	5.3	6.0	5.9	5.8	103
05408	6.1	5.7	5.5	5.8	101
05418	5.7	5.2	6.8	5.8	85

Table 39. (Cont'd.)

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total Battery	
05428	6.1	5.4	5.4	5.6	90
05438	5.4	5.7	5.0	5.4	104
05448	5.5	4.8	5.9	5.3	100
05458	4.4	4.8	4.7	4.7	90
05468	3.8	4.9	5.2	4.6	82
05478	4.4	4.4	5.1	4.6	80
05488	3.6	4.5	5.8	4.4	85
05498	4.4	4.8	4.7	4.7	80
05508	5.4	5.0	5.9	5.4	112

Table 40. Achievement grade placement scores, fifth grade--1965

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
05015	8.2	7.2	8.9	7.6	111
05025	8.4	7.2	7.8	7.5	112
05035	8.2	7.0	8.0	7.4	99
05045	9.5	6.8	7.6	7.4	119
05055	7.8	6.9	7.8	7.3	129
05065	9.0	6.4	8.4	7.2	116
05075	7.9	6.5	8.0	7.1	125
05085	6.6	6.8	7.4	6.9	106
05095	7.4	6.6	7.1	6.9	108
05105	6.7	6.5	6.9	6.9	101
05115	6.3	6.2	7.8	6.6	102
05125	7.1	6.2	7.1	6.6	115
05135	6.6	6.7	6.2	6.6	118
05145	7.1	6.4	6.4	6.5	113
05155	6.6	6.0	7.8	6.5	100
05165	6.0	6.3	7.0	6.4	101
05175	6.5	6.0	6.6	6.3	98
05185	6.2	6.5	5.7	6.2	101
05195	5.7	5.6	6.7	5.9	101
05205	4.9	6.3	5.8	5.7	87
05215	4.2	6.2	5.9	5.5	96
05225	4.5	5.8	5.3	5.3	82
05235	4.6	5.0	5.2	4.9	80
05245	4.5	5.0	4.2	4.7	75
05255	4.2	5.7	3.6	4.7	97
05265	6.8	5.8	7.2	6.4	102
05275	3.2	4.8	4.2	4.1	74
05285	7.9	6.5	7.0	6.9	105
05295	7.1	6.5	7.4	6.8	107
05305	8.4	7.3	7.4	7.5	108
05315	9.0	7.1	7.2	7.5	134
05325	8.7	6.7	7.2	7.2	110
05335	8.9	6.4	7.4	7.1	104
05345	8.4	6.1	7.1	7.0	108
05355	8.7	6.7	6.1	6.9	114
05365	7.5	6.5	7.1	6.8	118
05375	6.9	6.3	8.0	6.8	106
05385	8.2	5.8	7.8	6.7	106
05395	7.2	6.0	8.0	6.7	112
05405	7.1	6.5	6.7	6.7	105
05415	6.4	6.5	7.1	6.6	98
05425	7.5	5.8	7.8	6.6	110
05435	6.5	6.2	6.8	6.4	113

Table 40. (Cont'd.)

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
05445	7.2	6.1	6.1	6.3	105
05455	6.3	6.0	6.9	6.3	113
05465	8.2	6.2	6.6	6.6	97
05475	5.7	5.3	6.5	5.8	97
05485	5.5	5.8	5.4	5.7	85
05495	5.5	5.4	5.6	5.5	92
05505	4.6	4.9	5.8	5.0	74
05515	4.5	5.5	4.9	5.0	95
05525	3.8	5.0	4.2	4.4	93
05535	6.7	6.3	7.0	6.6	110
05545	5.7	6.1	5.6	5.9	97
05555	5.7	6.4	6.6	6.3	96

Table 41. Achievement grade placement scores, sixth grade--1953

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total Battery	
06013	8.9	9.5	8.0	8.9	124
06023	8.9	8.7	8.0	8.5	121
06033	8.7	8.5	8.2	8.4	109
06043	8.2	8.7	7.5	8.2	105
06053	7.7	8.7	7.5	8.1	113
06063	8.2	8.5	7.3	8.1	107
06073	7.7	8.0	8.0	7.8	113
06083	8.0	7.8	8.0	7.8	120
06093	7.7	8.2	7.1	7.7	101
06103	7.4	8.1	7.5	7.8	108
06113	6.8	8.1	7.1	7.7	120
06123	7.7	7.9	7.0	7.6	110
06133	7.3	8.0	7.3	7.6	112
06143	7.4	8.0	7.1	7.6	103
06153	7.0	8.1	7.0	7.5	99
06163	7.1	8.7	6.6	7.5	107
06173	7.6	8.1	6.5	7.5	109
06183	7.7	7.9	6.6	7.5	108
06193	6.6	8.5	6.8	7.4	108
06203	7.0	7.9	6.7	7.3	118
06213	6.8	7.7	7.0	7.3	102
06223	7.3	7.7	6.8	7.3	123
06233	7.4	7.6	6.8	7.3	108
06243	7.1	7.5	7.1	7.3	98
06253	6.8	7.4	6.8	7.1	101
06263	7.7	7.0	6.7	7.0	100
06273	6.7	7.2	6.8	6.9	99
06283	7.3	7.3	6.9	6.9	102
06293	6.7	7.4	6.4	6.9	101
06303	6.2	6.7	7.3	6.8	98
06313	6.5	6.8	6.8	6.7	95
06323	5.4	6.6	6.9	6.4	98
06333	6.8	5.6	7.5	6.4	96
06343	5.7	6.9	5.6	6.3	94
06353	5.9	6.5	6.0	6.3	93
06363	5.4	6.8	5.1	6.0	79
06373	5.0	5.8	6.1	5.6	86
06383	4.4	6.6	5.5	5.6	82

Table 42. Achievement grade placement scores, sixth grade--1958

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
06018	8.8	7.1	9.0	7.8	129
06028	8.6	7.2	8.1	7.7	108
06038	8.3	7.5	6.6	7.5	112
06048	8.3	6.9	7.5	7.3	129
06058	8.3	6.7	7.9	7.3	112
06068	8.3	6.9	7.0	7.2	110
06078	8.3	6.8	6.9	7.1	116
06088	6.2	7.1	7.4	7.0	121
06098	7.4	6.6	7.3	7.0	99
06108	7.3	6.6	7.0	6.9	93
06118	7.6	6.5	6.5	6.8	114
06128	8.0	6.3	7.1	6.8	105
06138	6.1	6.8	7.0	6.7	105
06148	7.3	6.3	7.1	6.7	98
06158	6.2	6.6	7.0	6.5	104
06168	5.8	6.8	6.7	6.6	96
06178	5.8	6.7	7.0	6.5	119
06188	6.9	6.0	6.3	6.3	110
06198	5.7	6.3	6.6	6.2	90
06208	6.1	5.8	7.2	6.2	102
06218	6.5	6.1	5.8	6.1	108
06228	5.4	6.5	5.8	6.0	95
06238	4.9	6.2	6.3	5.8	108
06248	5.6	5.8	6.0	5.8	80
06258	5.3	6.2	5.8	5.8	85
06268	8.3	7.2	7.5	7.5	128
06278	8.8	6.9	7.1	7.3	124
06288	7.8	7.0	7.7	7.3	110
06298	7.8	7.1	7.1	7.3	113
06308	7.4	6.8	7.7	7.2	100
06318	6.9	7.1	7.7	7.2	110
06328	7.3	7.2	7.1	7.2	121
06338	7.3	7.1	7.3	7.2	114
06348	7.4	6.7	7.1	7.0	99
06358	8.1	6.4	7.1	6.9	111
06368	8.1	6.4	7.0	6.9	97
06378	7.1	6.6	6.9	6.8	109
06388	6.8	6.8	6.8	6.8	98
06398	6.9	6.3	6.4	6.5	101
06408	5.7	6.7	6.7	6.5	104
06418	5.5	6.6	7.4	6.5	108
06428	6.3	6.3	6.5	6.4	106

Table 42. (Cont'd.)

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
06438	6.2	6.2	6.7	6.3	102
06448	6.2	6.3	5.6	6.1	98
06458	5.6	5.9	6.9	6.0	98
06468	5.6	6.3	6.1	6.1	95
06478	5.2	6.3	6.3	6.0	94
06488	5.7	5.4	6.0	5.7	104
06498	5.5	5.9	5.2	5.6	90
06508	5.1	5.6	5.5	5.4	96
06518	4.6	6.1	5.6	5.5	80
06528	4.6	5.8	6.0	5.5	82
06538	4.9	4.5	4.8	4.7	75
06548	2.9	4.8	3.1	3.7	70

Table 43. Achievement grade placement scores, sixth grade--1965

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
06015	9.5	9.0	10.5	9.5	128
06025	10.0	9.0	10.0	9.5	137
06035	10.0	8.7	8.4	9.0	124
06045	9.0	9.5	7.8	8.8	133
06055	9.0	8.8	8.0	8.7	135
06065	9.5	8.6	7.4	8.3	127
06075	8.9	8.3	8.9	8.6	110
06085	9.5	8.1	8.2	8.3	129
06095	9.0	8.6	7.8	8.5	128
06105	8.2	8.0	8.0	8.0	110
06115	7.9	8.8	8.4	8.5	124
06125	8.4	8.6	7.8	8.2	122
06135	7.5	7.4	8.7	7.6	120
06145	8.7	7.3	8.0	8.1	118
06155	6.6	8.1	7.8	7.6	97
06165	6.5	7.6	8.4	7.5	102
06175	7.8	7.5	6.9	7.3	109
06185	8.7	8.1	6.7	7.6	116
06195	6.3	7.4	7.3	7.1	108
06205	6.9	7.4	6.5	7.1	107
06215	6.5	7.2	6.4	6.8	80
06225	7.5	6.6	6.3	6.7	110
06235	5.8	7.7	5.6	6.6	109
06245	5.4	7.1	6.2	6.3	92
06255	4.5	5.0	5.3	4.9	83
06265	6.0	6.0	5.1	5.2	82
06275	4.4	4.6	5.2	4.7	78
06285	11.0	8.4	8.4	8.8	131
06295	8.9	8.4	7.3	8.3	123
06305	8.4	8.0	7.4	7.9	117
06315	7.3	8.1	8.7	8.0	128
06325	8.4	7.4	8.2	7.6	129
06335	10.0	7.7	7.6	8.1	126
06345	7.6	8.0	7.8	7.8	113
06355	7.6	7.7	7.6	7.7	125
06365	7.3	7.6	8.0	7.6	114
06375	6.9	8.1	7.6	7.7	117
06385	6.1	7.9	7.4	7.3	108
06395	8.9	8.6	8.4	8.5	122
06405	7.2	6.8	7.8	7.4	102
06415	8.7	7.8	5.7	7.2	100

Table 43. (Cont'd.)

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
06425	7.9	7.8	6.8	7.4	119
06435	6.8	7.6	6.2	7.3	100
06445	7.6	7.3	6.8	7.2	95
06455	5.7	7.2	6.7	6.7	97
06465	5.2	7.1	6.2	6.3	96
06475	5.3	6.7	6.4	6.2	95
06485	5.2	6.0	6.5	6.0	114
06505	4.2	5.6	5.2	5.3	84
06515	4.1	5.3	4.7	5.7	76
06525	4.5	4.8	5.4	4.8	68
06535	4.5	4.3	4.8	4.5	73
06545	6.4	6.8	6.1	6.6	102

Table 44. Achievement grade placement scores, eighth grade--1953

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
08013	7.5	8.7	8.4	8.2	121
08023	8.4	7.3	9.2	8.2	104
08033	9.7	9.6	9.6	9.7	105
08043	9.2	9.5	9.0	9.3	112
08053	5.3	7.9	7.4	6.7	82
08063	7.8	9.5	8.6	8.7	107
08073	6.3	8.5	6.7	7.2	84
08083	7.3	8.7	8.8	8.2	98
08093	7.9	8.2	8.6	8.2	102
08103	6.8	6.4	7.8	6.8	80
08113	7.9	6.1	8.5	7.3	78
08123	8.2	8.8	9.5	8.8	106
08133	9.6	8.6	9.6	9.2	103
08143	6.3	6.9	6.4	6.6	79
08153	9.7	9.5	8.5	9.4	112
08163	10.3	10.0	9.9	10.1	121
08173	8.0	7.8	7.4	7.8	95
08183	8.0	9.6	9.6	9.1	100
08193	7.5	8.1	6.6	7.5	95
08203	9.0	8.1	8.5	8.5	107
08213	9.1	8.7	9.0	8.9	103
08223	5.5	7.7	6.1	6.5	85
08233	9.6	9.5	9.8	9.6	125
08243	9.6	9.6	9.2	9.5	118
08253	9.2	8.5	7.5	8.5	97
08263	8.4	9.5	8.6	9.3	119
08273	9.5	8.5	9.1	8.8	105
08283	8.8	9.4	9.0	9.1	108
08293	6.0	7.1	7.2	6.7	86
08303	9.6	10.5	9.9	10.0	109
08313	6.5	7.0	7.5	6.9	101
08323	8.1	7.6	8.9	8.1	95
08333	9.6	9.1	10.3	9.6	120
08343	9.2	8.9	8.3	8.9	100
08353	8.9	9.5	9.1	9.2	108
08363	9.7	9.7	9.5	9.7	109
08373	7.1	7.5	7.5	7.4	94
08383	9.6	9.3	9.3	9.4	126
08393	7.3	8.0	8.5	7.8	99

Table 45. Achievement grade placement scores, eighth grade--1958

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
08018	9.6	9.6	9.0	9.5	115
08028	7.0	5.2	6.6	6.1	85
08038	8.7	8.4	8.9	8.7	110
08048	7.6	7.6	8.4	7.8	102
08058	9.1	11.5	8.7	9.8	110
08068	7.5	7.5	9.5	8.0	98
08078	10.5	7.7	6.1	8.2	101
08088	9.6	8.8	9.7	9.3	110
08098	7.6	9.5	8.7	8.7	90
08108	8.2	7.7	8.1	8.0	90
08118	8.4	10.4	6.3	8.6	98
08128	7.5	6.3	8.9	7.3	88
08138	7.6	9.5	7.8	8.4	95
08148	8.6	8.7	9.7	8.9	105
08158	7.7	9.2	8.7	8.5	106
08168	11.0	7.5	5.3	8.1	121
08178	9.6	9.5	8.0	9.2	127
08188	7.3	6.5	8.1	7.2	98
08198	10.1	8.7	7.1	8.8	106
08208	9.4	6.0	6.2	7.1	91
08218	11.5	7.1	7.5	8.7	112
08228	7.6	7.5	9.5	8.0	90
08238	11.5	9.5	9.6	10.3	110
08248	8.2	9.0	8.0	8.5	102
08258	9.7	9.6	9.7	9.7	126
08268	9.6	9.4	9.7	7.5	95
08278	7.6	8.6	6.4	7.7	99
08288	7.2	6.4	8.1	7.1	95
08298	8.9	7.6	9.3	8.4	104
08308	8.8	8.0	9.5	8.6	106
08318	7.7	8.6	6.4	7.7	89
08328	7.4	7.2	7.3	7.3	95
08338	12.5	9.6	6.7	9.6	129
08348	10.5	6.6	7.4	8.1	104
08358	9.6	8.1	8.2	8.6	109
08368	9.2	9.5	8.9	9.3	121
08378	9.0	9.6	8.9	9.3	114
08388	7.5	7.7	9.1	8.0	96
08398	8.2	9.2	9.5	9.0	112
08408	9.6	7.9	8.6	8.8	104
08418	9.6	9.6	9.6	9.6	128

Table 45. (Cont'd.)

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
08428	6.9	8.3	8.4	7.8	97
08438	9.3	9.2	9.4	9.3	104
08448	7.5	7.8	7.8	7.7	98
08458	7.5	7.4	8.0	7.6	94
08468	9.6	9.4	9.1	9.4	115
08478	7.2	7.7	6.7	7.3	90
08488	9.6	8.6	9.6	9.2	108
08498	7.5	6.4	7.7	7.1	94
08508	9.6	8.6	9.6	9.2	123
08518	9.4	9.2	8.6	9.1	108
08528	9.1	8.8	9.4	9.1	115
08538	7.0	6.5	8.4	7.1	88
08548	8.0	6.5	7.5	7.1	89
08558	7.9	6.7	7.5	7.3	90
08568	7.5	6.7	7.7	7.2	82

Table 46. Achievement grade placement scores, eighth grade--1965

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
08015	11.5	11.5	12.0	11.5	135
08025	10.6	13.0	11.0	10.7	131
08035	10.4	10.8	11.0	10.7	135
08045	10.5	11.0	10.1	10.6	130
08055	10.5	11.0	10.0	10.6	128
08065	9.6	11.0	10.6	10.2	117
08075	9.6	13.0	9.2	10.2	119
08085	10.1	12.0	8.4	10.1	125
08095	9.4	10.6	10.5	10.1	119
08105	10.1	10.2	9.9	10.1	127
08115	9.3	11.0	10.2	10.1	111
08125	10.4	9.6	9.7	9.9	118
08135	9.8	10.6	9.1	9.9	107
08145	9.7	10.3	9.5	9.8	118
08155	9.4	10.5	9.6	9.8	116
08165	10.3	9.7	9.2	9.8	131
08175	8.8	10.3	10.1	9.7	106
08185	9.8	9.4	9.7	9.6	120
08195	10.1	10.0	8.0	9.6	123
08205	10.3	9.1	9.1	9.5	110
08215	10.6	9.2	8.3	9.5	110
08225	9.6	9.9	8.6	9.5	120
08235	9.6	9.5	8.2	9.3	106
08245	10.0	8.5	9.0	9.2	110
08255	9.8	8.8	8.5	9.2	126
08265	9.6	8.3	9.3	9.1	98
08275	9.5	8.7	8.8	9.0	121
08285	9.6	9.1	7.4	8.8	119
08295	8.8	8.6	8.2	8.6	111
08305	8.8	8.3	8.5	8.5	115
08315	8.3	8.2	9.3	8.5	114
08325	9.0	8.0	7.8	8.3	119
08335	7.4	9.5	7.7	8.3	93
08345	7.5	9.4	7.6	8.3	101
08355	7.9	8.5	8.3	8.3	119
08365	8.6	7.5	8.4	8.1	95
08375	8.2	7.5	8.5	8.0	97
08385	8.7	6.8	8.3	7.9	101
08395	8.1	6.7	8.6	7.7	98
08405	8.5	6.7	7.9	7.7	102
08415	7.0	7.9	7.7	7.5	109
08425	8.0	6.4	8.0	7.3	110

Table 46. (Cont'd.)

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
08435	7.4	7.6	6.7	7.3	101
08445	8.8	6.1	7.3	7.3	98
08455	7.0	7.1	7.8	7.3	105
08465	7.1	6.8	7.5	7.1	99
08475	9.0	6.5	6.9	7.0	86
08485	6.3	6.7	7.8	6.8	90
08495	7.0	7.4	5.4	6.8	76
08505	6.6	6.2	6.8	6.5	86
08515	7.0	5.3	6.8	6.2	76
08525	5.4	5.9	5.0	5.6	50
08535	7.4	7.2	6.0	6.8	70
08545	6.4	4.3	4.3	5.9	67
08555	10.5	11.0	10.5	10.7	129

Table 47. Achievement grade placement scores, eleventh grade--1953

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
11013	12.6	12.4	12.5	12.5	108
11023	8.8	10.0	11.0	9.9	106
11033	12.1	11.5	12.5	12.1	104
11043	10.2	11.5	12.5	11.3	110
11053	8.9	8.9	9.1	9.0	95
11063	12.6	6.9	10.7	9.8	98
11073	11.5	11.0	11.1	11.2	101
11083	8.0	8.0	9.2	8.3	85
11093	12.3	11.5	12.5	12.2	105
11103	10.2	8.0	10.7	9.5	93
11113	11.5	11.4	10.5	11.2	112
11123	10.8	12.4	12.5	11.9	108
11133	11.4	11.2	11.4	11.4	99
11143	13.5	13.5	13.5	13.5	124
11153	8.0	8.0	8.0	8.0	88
11163	10.3	9.2	12.3	10.6	98
11173	10.2	12.6	12.3	11.7	100
11183	11.5	9.3	11.4	10.8	110
11193	12.2	11.9	12.5	12.2	112
112-3	8.0	7.2	8.0	7.7	84
112.3	10.5	10.9	10.8	10.8	85
11223	10.1	8.1	11.9	10.0	110
11233	10.5	11.9	11.9	11.4	118
11243	11.3	8.0	11.7	10.2	92
11253	12.3	8.0	12.5	10.9	95
11263	11.8	9.3	12.3	11.2	105
11273	11.7	12.6	12.3	12.2	120
11283	8.8	8.8	12.5	9.9	90
11293	8.8	8.0	11.4	9.2	105
11303	8.5	8.0	8.1	8.2	90
11313	9.5	8.0	9.5	9.0	95

Table 48. Achievement grade placement scores, eleventh grade--1958

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
11018	12.9	15.0	12.6	13.6	120
11028	12.0	14.1	11.9	13.0	118
11038	11.9	8.6	10.8	10.5	98
11048	12.3	14.4	10.8	12.6	104
11058	8.9	7.9	9.5	8.7	90
11068	8.8	7.2	7.6	8.3	95
11078	11.2	12.3	12.4	12.4	101
11088	9.5	12.5	9.0	10.4	97
11098	9.2	12.3	10.8	10.7	99
11108	11.4	10.2	12.7	11.5	104
11118	11.2	12.4	11.7	12.1	90
11128	12.4	14.4	14.1	13.6	123
11138	11.4	14.2	14.1	13.1	118
11148	11.2	10.6	12.2	11.4	104
11158	11.2	13.7	13.3	12.3	94
11168	14.0	11.6	12.4	12.9	114
11178	11.4	12.4	9.7	11.2	94
11188	13.0	11.0	11.9	12.1	101
11198	11.9	14.5	11.8	12.7	105
11208	11.3	11.9	12.6	11.9	96
11218	13.7	13.8	12.3	13.4	106
11228	8.1	7.5	9.1	8.1	90
11238	8.1	7.2	7.6	7.6	88
11248	10.8	9.5	11.9	10.8	108
11258	9.4	9.3	12.2	10.2	102
11268	15.2	15.2	12.9	14.5	129
11278	10.9	9.4	11.9	10.8	106
11288	11.7	15.0	13.6	13.4	121
11298	12.5	14.1	11.7	12.8	114
11308	12.9	10.3	13.0	12.2	108
11318	8.3	11.5	11.1	10.2	103
11328	13.7	12.9	11.7	12.9	116
11338	14.0	14.3	14.4	14.3	126
11348	14.0	12.4	13.8	13.6	110
11358	9.0	9.9	9.0	9.3	105
11368	9.5	8.2	8.6	8.9	80
11378	13.5	11.8	13.4	13.0	117
11388	11.3	10.5	11.6	11.2	95
11398	12.3	12.7	11.7	12.2	100
11408	9.2	11.6	10.0	10.2	102
11418	10.9	9.1	8.3	9.5	101
11428	12.8	13.7	12.7	13.1	93
11438	7.8	11.8	8.6	9.2	95

Table 49. Achievement grade placement scores, eleventh grade--1965

Student number	Achievement grade placement				I.Q. score
	Reading	Arithmetic	Language	Total battery	
11015	16.0	16.5	16.0	16.5	132
11025	15.0	16.5	13.7	15.0	129
11035	14.5	15.7	15.2	15.0	115
11045	14.5	14.5	14.7	14.5	126
11055	14.5	15.5	12.9	14.4	136
11065	13.8	15.2	14.0	14.3	119
11075	13.8	15.0	13.0	14.0	98
11085	14.7	13.7	13.0	14.0	106
11095	13.6	13.7	14.5	13.9	105
11105	14.4	13.3	13.6	13.9	122
11115	13.1	15.5	12.6	13.8	111
11125	12.5	16.2	12.1	13.6	118
11135	12.0	14.7	14.2	13.6	110
11145	12.1	14.5	14.1	13.5	109
11155	13.8	13.6	12.8	13.5	111
11165	13.4	14.7	11.6	13.4	107
11175	12.4	13.6	13.8	13.2	107
11185	14.4	12.6	13.0	13.6	104
11195	11.1	15.0	12.8	12.9	107
11205	12.3	13.6	12.2	12.7	101
11215	11.9	14.0	12.2	12.7	102
11225	11.9	12.9	13.3	12.6	93
11235	13.1	10.0	13.6	12.3	112
11245	12.4	13.3	11.1	12.3	102
11255	10.9	13.7	10.7	11.8	100
11265	11.7	9,7	13.6	11.7	100
11275	11.8	10.6	12.1	11.6	84
11285	12.3	10.5	10.6	11.2	95
11295	98	10.4	12.2	10.8	93
11305	12.0	8.8	11.0	10.6	101
11315	9.9	7.7	11.4	9.4	96
11325	8.8	8.9	10.1	9.2	74
11335	10.7	7.5	9.2	9.0	94
11355	10.0	7.9	8.4	8.8	92
11365	7.1	7.8	8.5	7.8	83
11375	7.3	6.7	7.8	7.2	90
11385	10.2	8.1	11.8	10.2	95
11395	9.9	8.9	11.2	10.2	103
11405	11.7	12.7	12.7	12.5	99

VITA

Kenneth B. Maughan

Candidate for the Degree of

Doctor of Education

Dissertation: A Description of Change in School Expenditures in the San Juan School District from 1951 to 1965 and An Analysis of Student Achievement During the Same Period

Major Field: Educational Administration

Biographical Information:

Personal Data: Born at Wellsville, Utah, March 23, 1924, son of Lena B. and Frank L. Maughan; served in United States Army, 1943-46; married Marceline Bailey, July 21, 1949; five children--Craig, Steven, Terry, Mitchel, and Rhett.

Education: Attended elementary school in Wellsville, Utah; graduated from South Cache High School in 1942; attended Pasadena Junior College while in service in 1943; received the Bachelor of Science degree from Utah State University, with a major in Entomology, in 1949; completed requirements for the Master of Science degree in Entomology at Utah State University, 1951; did graduate work in education at Utah University, summer, 1958; completed requirements for the Ed. D., specializing in educational administration, at Utah State University in June, 1967.

Professional Experience: 1958 to present, Assistant Superintendent, San Juan School District, Monticello, Utah, in charge of teacher personnel, curriculum, pupil personnel, and secondary supervisor; 1956-58, Principal, Monticello High School, Monticello, Utah; 1951-56, Principal, Monticello Elementary School, Monticello, Utah; 1949-51, research entomologist, United States Department of Agriculture, Choteau, Montana; assistant entomologist, summers of 1946-55.